Important information

Re-tuning your digital TV recorder

digitaluk

The digital TV switchover

Television services in the UK are going digital TV region by TV region, ending in 2012. The digital TV switchover is happening so that Freeview services (digital TV through an aerial) can be extended to people who can't currently get them.

Digital UK is the not-for-profit organisation responsible for leading the TV switchover. We're independent, which means that all the advice and information we give is unbiased.

When do I re-tune?

- At each of the two stages of switchover
- If at any time you find you have lost any TV channels
- Regular re-tuning will ensure your equipment is up to date and that it picks up new channels as they become available

To find out when you switch and need to re-tune, visit our postcode checker at digitaluk.co.uk

Any Freeview product, including Freeview HD, needs to be re-tuned.

How do I re-tune my Freeview TV or box?

Re-tuning only takes a few minutes, just follow the steps below:

- Switch on your Freeview television or box, using your remote control, press 'menu'
- Select the ' installation' option
- Select the option Auto Scan
- Press 'OK' if your equipment asks if you want to delete all your channels, Don't worry, this is normal
- If you are prompted for a code, try 0000
- Channels will be automatically installed. This may take a few minutes and your equipment may shut down and restart
- After re-tuning, you may have to reset your 'favourites'list

Please note: most digital TV recorders will keep your original recordings after running a re-tune but you will need to reset any future recordings.

When does switchover happen?

Border	Switched
West Country	Switched
Granada	Switched
Wales	Switched
West	Switched
STV North	2010
Channel Islands	2010
STV Central	2010/11
Central	2011
Yorkshire	2011
Anglia	2011
London	2012
Meridian	2012
Tyne Tees	2012
UTV	2012

To find out which transmitter group you are likely to receive your TV signal from, visit our postcode checker† at digitaluk.co.uk or call us on 08456 50 50 50

get set for digital

†This is a predictive coverage database and should be used as a guide only. • Calls are free for BT customers within inclusive calling plans. Call charges from other providers may vary. The standard business hours for Digital UK's contact centre are 8am to 7pm Monday to Friday and 10am to 4pm on a Saturday. Opening hours will be extended during switchover in each area. Digital UK, PO Box 56593, Kirkcaldy,KY2 6AG.

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Notice

- For your safety, please do not proceed without care.

Warnings, Cautions and Notes

Throughout the whole manual, please pay special attention to the following marks that indicate hazardous situations.

Caution

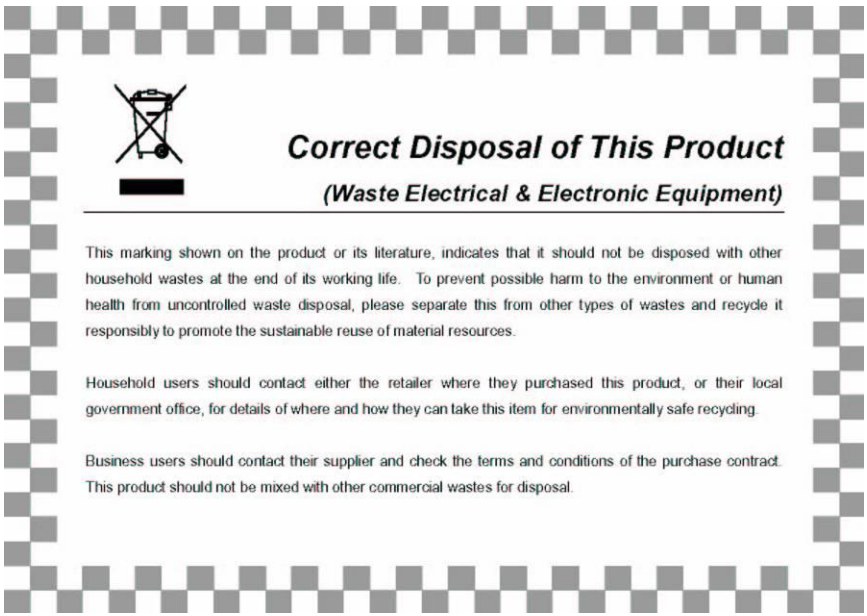
Indicates a situation which, if not avoided, could damage the equipment or apparatus.

Warnings

Indicates a hazardous situation which, if not avoided, could result in serious injury.

Note

Indicates additional information to the user to make the user aware of possible problems and information of any importance to help the user to understand, to use and to maintain the installation.


Correct Disposal of This Product
(Waste Electrical & Electronic Equipment)
This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.
Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.
Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

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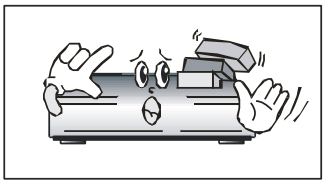
ABOUT DIVX VIDEO-ON-DEMAND: This DivX Certified® device must be registered in order to play DivX Video-on-Demand (VOD) content. To generate the registration code, locate the DivX VOD section in the device setup menu. Go to vod.divx.com with this code to complete the registration process and learn more about DivX VOD.

"DivX Certified® to play DivX® video, including premium content"

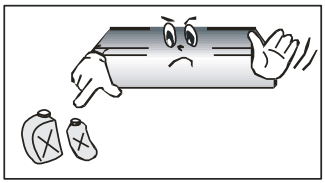
Safety Information

This digital terrestrial receiver has been manufactured to comply with international safety standards. Please read the following safety precautions carefully.

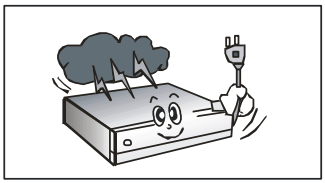
Safety Instructions and Precautions



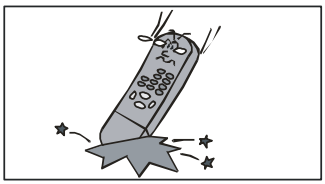
Avoid placing heavy items on the unit. Ensure that ventilation holes are not blocked, as this constitutes a serious fire hazard.



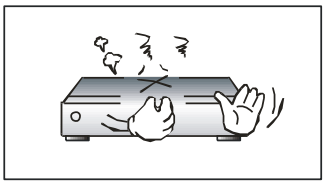
Do not clean the unit with petroleum-based cleansers as this can damage the paintwork. Use a dry, dust-free cloth.



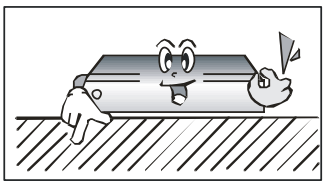
Disconnect the power and antenna cables during long absences or during electrical storms.



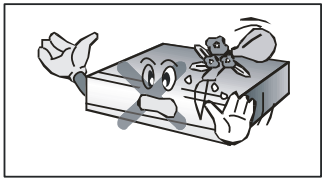
Avoid dropping the Remote Control Unit.



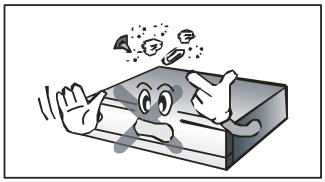
If there is smoke or a burning smell, turn off & unplug the unit immediately. Contact your local repair centre for advice or call 08712 003 191.



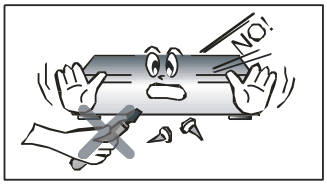
Avoid placing the unit on slippery or sloped surfaces.



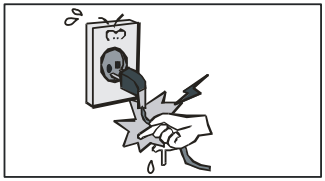
Keep the unit away from all moisture sources.



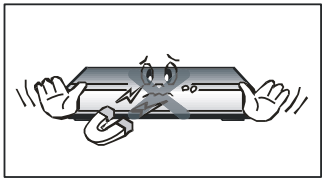
Keep the unit free of dust. Dust or metallic particles that find their way into the unit can cause fire or electric shock.



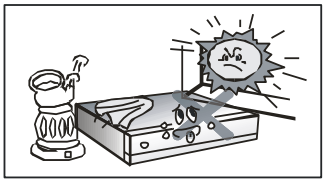
Do not open the unit. It contains no user-serviceable parts.



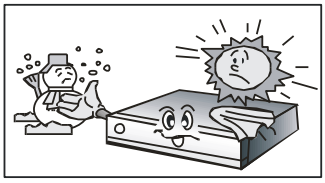
Do not unplug the unit by grabbing the cord. Turn off the power at the point, and firmly pull the plug. Do not move the unit while the power cord is plugged in.



Ensure that the unit is kept well away from magnetic sources such as speakers. These can cause data loss (from the HDD).



Ensure that the unit is placed in a position that is well-ventilated and away from direct sunlight or sources of humidity.



Avoid use if the room air temperature exceeds 30 C, or drops below 5 C. Remember that temperatures inside an enclosed cabinet can be much higher. The maximum operating temperature is 45 C.

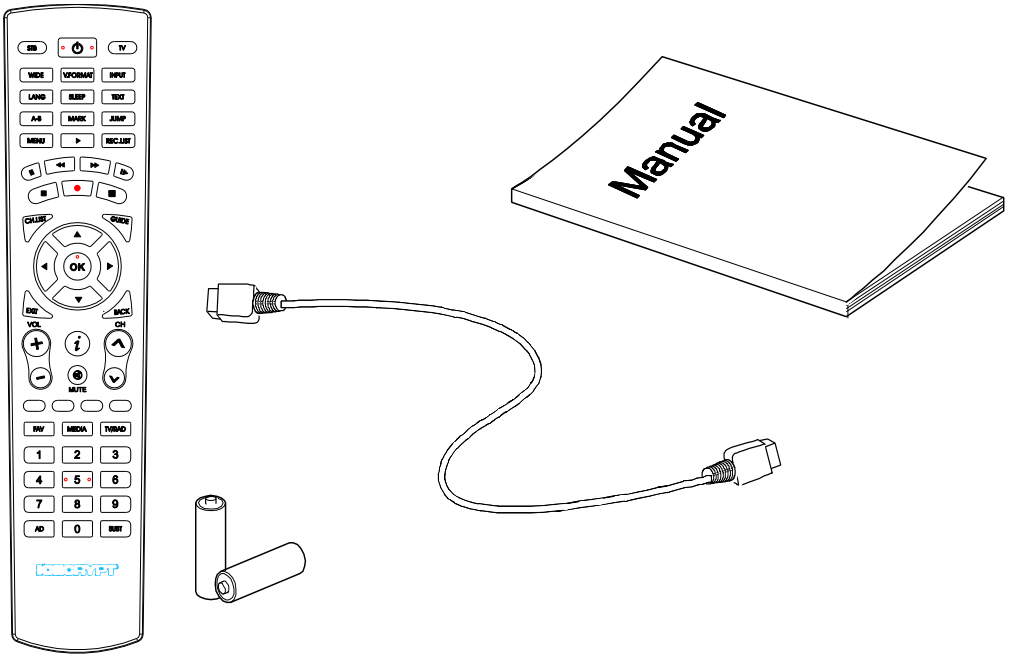
1. Before You Begin

1.1 Features

- Freeview High Definition Twin Tuner PVR
- Integrated Hard Disk Drive available with 500GB, 1TB and 2TB options (WD Green Drives)
- Records up to 500 hours with 1TB HDD (Up to 250 hours for HD content)
- 8 day Electronic Programme Guide (EPG)
- Time Shift function, 2 channel recording and 1 channel viewing
- Series recording and Recommendation
- Search by Genre and Search by Keyword
- Free HD Channels from BBC, ITV and Channel 4
- Up to 50 Digital TV channels and 24 Radio stations
- MPEG-4/MHEG5 Digital and fully DVB-T/T2 compliant
- Dolby Digital Plus Audio output
- Alphanumeric VFD with 16 characters and symbols
- Under 1W in passive mode standby power consumption (Clock 2W)
- Supports MP3 jukebox and DivX/AVI movie playback
- Full High Definition video resolution: 1920 x 1080P
- Click-Wheel control from front panel
- 2 x USB for external storage and data transfer
- 100MBit LAN connection for data transfer
- Vector Font and 256 colour GUI (Graphic User Interface)
- Variable aspect ratio with Full Screen, Centre Cut and Letter Box
- Teletext, Subtitles and Audio Description supported (VBI and OSD)
- Favourite Channel and Parental Lock Function

1.2 Accessories

- HDMI cable
- User's Manual
- Remote Control
- AAA dry cell batteries x 2
- Quick Start Guide

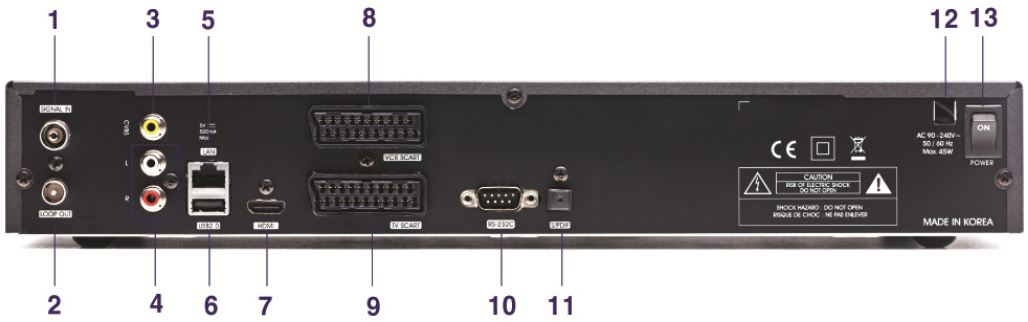


2. Controls and Functions

2.1 Front Panel

Item	Description
1. Power Button	Turns the receiver On/Off (Standby mode).
2. Jog Shuttle	① Increases/Decreases the volume levels in viewing mode. ② Push this to go to the channel list in viewing mode. ③ Moves the cursor up/down or left/right in menu mode. To transfer moving the cursor between up/down and left/right, push the **Menu** button.
3. Menu Button	Shows the Main menu in viewing mode.
4. EXIT Button	Exits from the current menu or cancels the current operation if applicable.
5. Display (VFD module)	Shows channel information and indicates operating status. In STAND BY mode, the display shows local time.
6. USB 2.0 port	USB 2.0 Host port is behind the panel door

2.2 Rear Panel



Item	Description
1. SIGNAL In	Connect the Antenna In Cable.
2. LOOP Out	Pass-through connector for your antenna signal. Connect other equipment needing an antenna connection to this connector.
3. CVBS	Use this to connect a composite video cable (CVBS - Yellow). Standard definition only (576i resolution).
4. Audio L/R	Connect L/R (White/Red) analogue audio cables to your TV or amplifier.
5. LAN	Network Interface
6. USB2.0	USB 2.0 Host port
7. HDMI	Connect to an HDMI input of TV. (1080p, 1080i, 720p, 576p resolutions supported)
8. VCR SCART	Connect a conventional VCR.
9. TV SCART	Connect a conventional TV.
10. RS-232C	Connect to a PC serial port (for software upgrade).
11. S/PDIF	Digital audio output for connection to an amplifier (or TV).
12. Electric Inlet Lead	90~240V AC (Auto-selectable), 50~60Hz
13. Power Switch	Turn Power to the unit On/Off.

2.3 Remote Control Unit

All receiver features can be controlled with the remote controller.

Button	Description
POWER (⏻)	To turn the STB On/Off
STB	To switch to STB control mode
TV	To switch to TV control mode
WIDE	To select the Aspect ratio (4:3 and 16:9)
V.FORMAT	To select the video output mode to 1080p, 1080i, 720p, 576p or 576i (HD Mode only)
INPUT	To switch the output of the TV SCART between the PVR's picture and the device connected to the VCR SCART
LANG	To select the audio language
SLEEP	To put the STB in Standby mode
TEXT	To activate Text or Interactive services
A-B	To set the block to Repeat, Copy and Cut
MARK	To set a bookmark
JUMP	To jump to bookmarked points
MENU	To display the main menu of the STB and come out from inner level to viewing mode (Exit all)
Play (▶)	To resume playback of the recorded file
REC.LIST	To display programmes to be recorded
Pause (⏸)	To pause playing mode, recording mode and Time Shift
REW (◀◀)	To rewind playback
FF (▶▶)	To fast forward playback
SLOW (I▶)	To playback in slow mode
STOP (■)	To stop playing mode, recording mode and Time Shift
REC (●)	To record the live channel

Button	Description
LIST ( )	To display the recorded file list in HDD
CH.LIST	To display the channel list
GUIDE	To show MHEG5 Electronic Programme Guide (EPG) - The Freeview Guide.
◀/▶	To move left/right or change settings in menu mode
▲/▼	To move up/down in menu mode
OK ( )	To confirm the choice and/or selections of the highlighted menu item
EXIT	To go back step one menu level, cancel an operation, or exit from menu
BACK	In EPG mode, returns to the previous screen. In full screen mode, toggles between the currently tuned-to and previously tuned-to channels.
VOL +/-	To change the volume level in viewing mode.
INFO ( )	To show the information of the Banner and EPG.
MUTE	To turn the sound on/off
CH+/-	To change channels in viewing mode.
F1, F2, F3, F4 ( )	To function as the corresponding colour option shown on screen
FAV	To select the favourite group list
MEDIA	To display the media contents (MP3, DivX, etc.) stored in the USB memory when the USB memory is connected to the USB port
TV/RAD	To switch between TV and Radio
NUMERIC Buttons (~)	To select channels or use as an alphabetic search key in the sorted channel lists
AD	To show the audio description when the audio description function is supported in the live channel
SUBT	To show the subtitle

< Program Remote Control for TV >

To switch the RCU between TV Control mode and PVR Control mode:

1. Press the **TV** or **STB** button at the bottom of the remote control.

To check which RCU control mode is active:

1. Simply look at the **TV** / **STB** buttons, which light up whenever one of the other remote control buttons is pressed.
2. In TV Control mode, the **TV** button will only illuminate when the button pressed actually sends a remote signal to the TV.

As an example - when the RCU is in TV Control mode:

1. If the **VOL+ / -** buttons are pressed, the TV button lights up.
2. Pressing the **STOP** button is not relevant to the TV so the TV button doesn't light up.

Programming the RCU to Control Your TV (Entering an RCU code from the code list):

1. Look in the code table (found in the A-3. Remote Control Code List by TV Manufacturer) for your TV.
2. Manufacturers often use several codes for different TV models, so you may need to try a number of codes.
3. Press - and hold - both the **OK** and **TV** buttons on the RCU for 3 seconds. The **TV** button will turn on.
4. Enter the 4-digit code.
5. If the remote code is correctly recognized, the **TV** button will turn off. If the **TV** button still turns on, please re-enter the code.
6. When the **TV** button turns off, press the **OK** button.
7. The TV button will flash three times and the programming will be finished.
8. Test your setup by sending a few commands to the TV.
9. If the TV doesn't respond, repeat the procedure with another code.

Resetting the Remote Control Unit

1. Input code '0000' to reset the remote control to the original factory setting.
2. The RCU does not support all TV models.

TVs are often made by other manufacturers, and therefore use different codes to those listed for the manufacturer (brand).

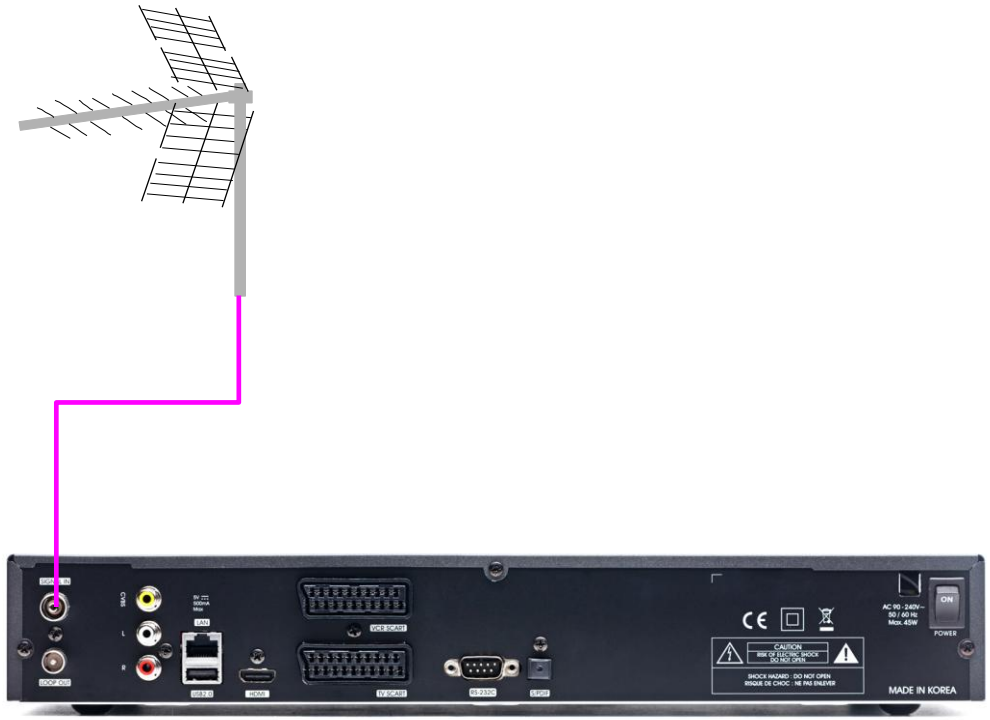
If no buttons are pressed for 5 seconds, the setup (learning) mode is cancelled.

3. Connections

3.1 Connecting to the Antenna

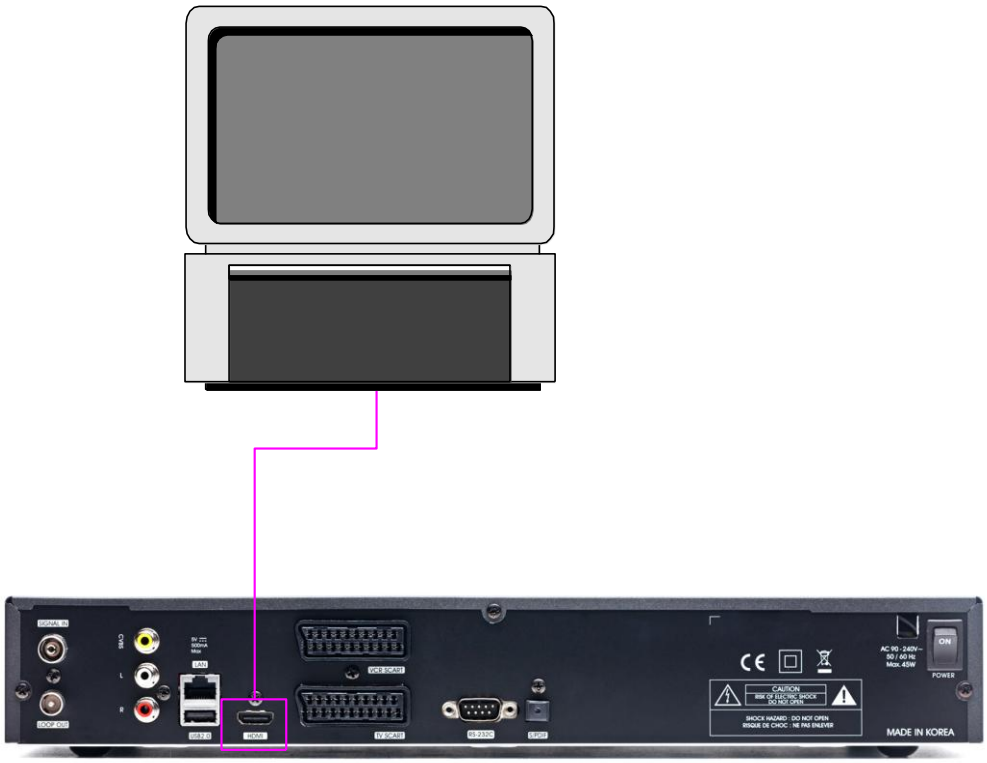
<Making Antenna connections>

1. Connect the antenna cable (75 ohm co-axial) to the SIGNAL IN connector.
2. To pass the antenna signal through to another device (such as a VCR and your TV), connect an appropriate 75 ohm co-axial cable from the Loop Out connector of the STB
   (The Loop Out connection will pass the antenna signal through to your Device even when the STB is in Standby mode (or turned off at the switch)



3.2 Connecting to TV

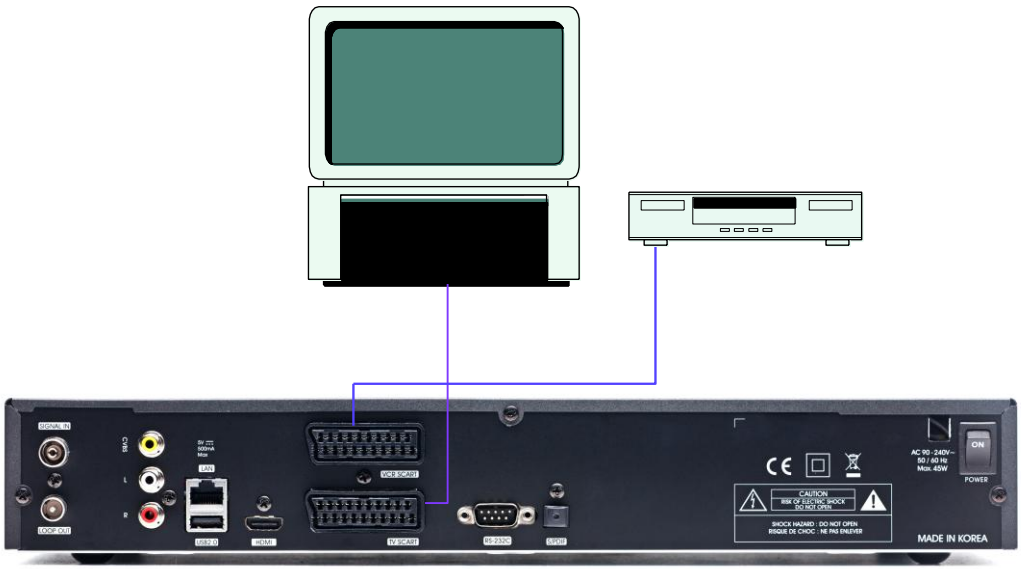
<Connecting to a Digital TV that has an HDMI input port>



1. Connect the HDMI output on the STB to the HDMI input on your monitor or TV.
2. Select HD mode and set the video output mode to 1080p, 1080i, 720p, 576p or 576i by pressing the **V.FORMAT** button on RCU.

For access to HD programming at the highest available resolution, use this connection method.

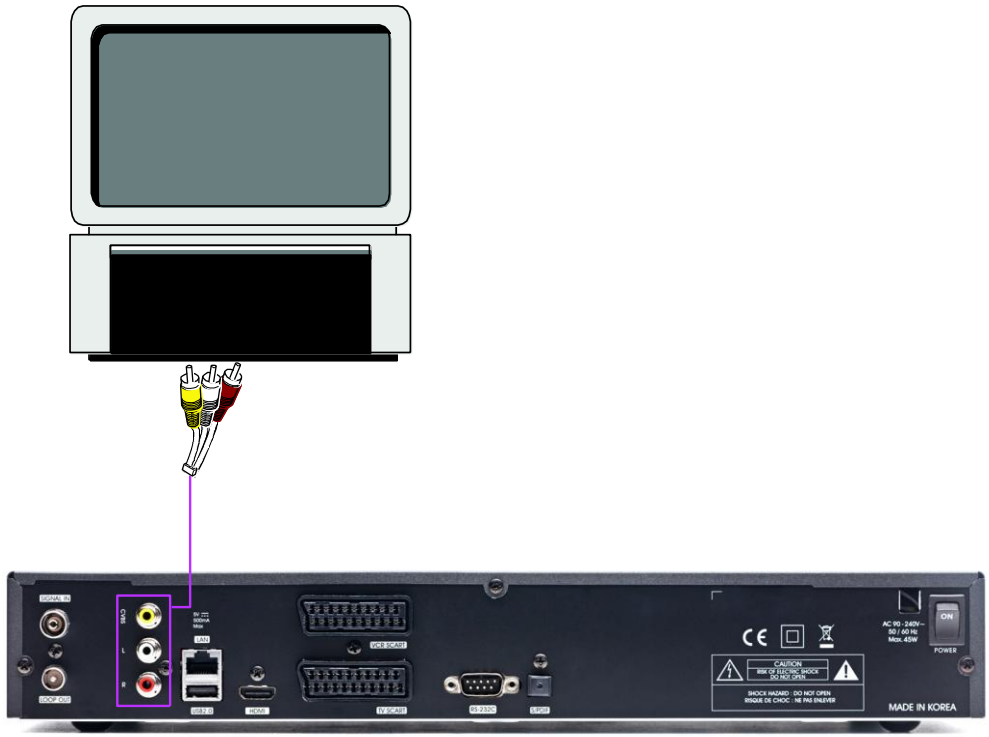
<Connecting to Standard Definition TV and VCR using the SCART output>



1. Connect the Video TV SCART of STB to TV with fully featured SCART cable. Select SD mode in Installation menu.

2. Connect the VCR SCART of STB to VCR with fully featured SCART cable.

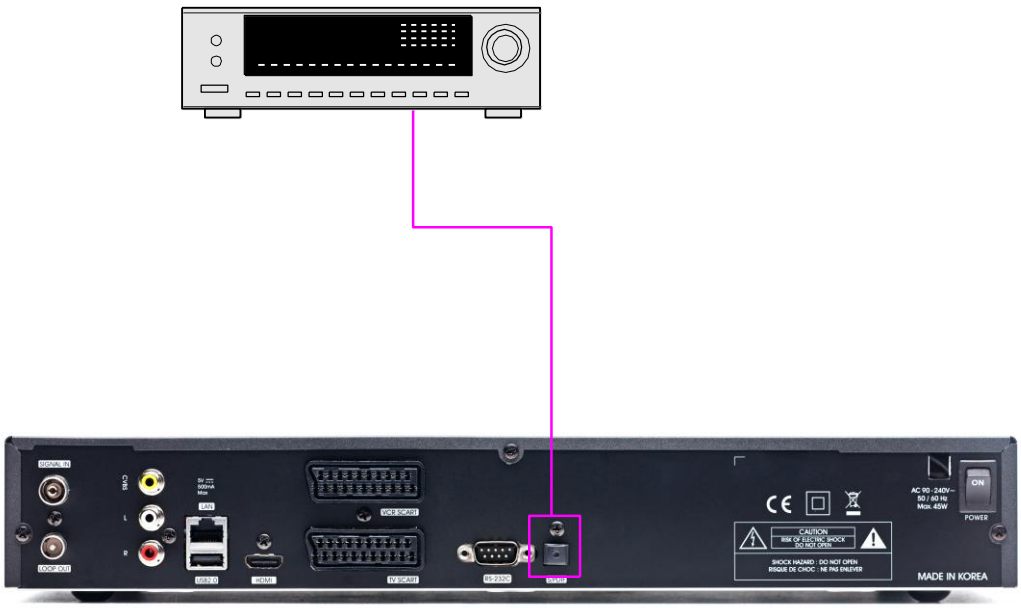
<Connecting to Standard Definition TV using the composite output>



1. Connect the Video and Audio of TV to the Video and Audio. Select SD mode in Installation Menu

2. Connect Red and White connector to Audio R and Audio L, and Yellow into Video port respectively.

<Connecting to A/V receiver (Dolby Digital amplifier)>



1. Connect the optical digital audio out on the STB to A/V receiver.
2. Set the audio out mode as 'AC3'.

4. Menu Overview

4.1 Menu Instruction

Press the **MENU** button to display the menu. You can select the sub menu using ▲/▼/◀/▶ buttons. The selected sub menu becomes highlighted.

1. When you have selected the sub menu you want, press OK button.
2. If you want to return to the live screen, press the **MENU or EXIT** button.

4.2 Menu Help

In the menu, short information is displayed at the bottom on screen.

: Using ▲/▼ buttons

: Using ◀/▶ buttons

: Using OK button

: Using the corresponding colour option shown on screen

: Using **EXIT** button

: Using numerical button

4.3 Menu Structure

In the menu, the short information is displayed at the bottom of the screen.

Please note that some menus are not available whilst a recording or playback is in progress.

Installation

- Antenna: To select the Antenna power settings (for Mast Head Amplifiers)
- Auto Scan: To search all channels automatically without specifying parameters
- Manual Scan: To search the channels manually by specifying parameters
- Reset to factory default: To restore the receiver to the default values

Setting

- AV Setting: To select the video or audio output
- Language: To select the display language, audio language, and subtitle language
- Parental Control: To change the password and select the censorship classification
- Power Setting: Select the Power save mode
- OSD Display: To set OSD display time and transparency

PVR

- Record Setting: To change Record Setting
- Scheduled Recordings: To move Timer List.
- Library: To move File list.
- Format HDD : To format HDD

Advanced

- OTA : To upgrade the receiver to the latest software version (subject to broadcast)
- USB Upgrade : To transfer the system software between receiver and USB drive
- Media Setting: To set media file play.
- Network Setting: To set the network parameter to use network functions via LAN port
- EDIT channel: Channel Delete, Channel Rename, Fav Delete, Fav Group Rename

Information

- System Information: To check the STB version
- HDD Information: To check HDD information.
- Network Message: To check Network information.

5. Menu Operation

5.1 First Installation

You can install the receiver using First Installation for your convenience.

'First Installation' allows you to set up your receiver following a simple procedure.

1. Select the desired language using the ▲/▼ buttons.
2. Press the OK button to confirm and begin scanning.

1. Use the ▲/▼ buttons to select HD (when using HDMI) or SD (when using SCART connections).
2. Press the OK button to confirm.

1. Select the desired screen ratio using the ▲/▼ buttons.
2. Press the OK button to confirm.

1. Select the desired display format using the ▲/▼ buttons.
2. Press the OK button to confirm.

1. Select the desired video format using the ▲/▼ buttons.
2. Press the OK button to confirm.

This is only available in HD mode.

1. Select Auto or Manual Scan using the ▲/▼ buttons.
2. Press the OK button to confirm.

- Previous Step button: If you want to go to the previous step, press the **Red** button and then you can reset options.
- Menu button: Resets options to default for that menu.
- Cancel and Exit button: If you want to skip 'First installation' press the **EXIT** button.

5.2 Installation

1. Press the **Menu** button to display the main menu.
2. Press the OK button on the sub menu such as Auto Scan. Manual Scan on the Installation is locked by password, and the password pop-up window appears. The default password is "0000".

5.2.1 Antenna

1. Select Antenna Power type using the ◀/▶ buttons. Antenna Power is defaulted to Off, if the antenna needs power supplied from receiver, you can select Antenna Power value as 'On'. (for external Masthead amplifiers).

Off is the default value in this option. If you have an internal distribution amplifier, you should not enable this option.

5.2.2 Auto Scan

1. The left window shows TV channels and the right window shows Radio channels during the scanning process. White channel names are new channels downloaded to your receiver. Grey channel names are already existing channels.

1. Choose Auto Scan menu and press OK button to begin scanning
2. You can press Exit at any time to stop scanning. A pop-up menu appears.
3. If you allow the complete scan, the same pop-up menu appears.

5.2.3 Manual Scan

1. Set the desired values (see right) to scan. Use the numeric keys (0-9) and ◀/▶ ▲/▼ buttons.
2. Press the OK button to start the manual scan.

- Channel: The target channel number for the manual scan
- Frequency: The transmitter frequency of the channel
- Modulation: The modulation type for the manual scan

Transmitter frequencies and other channel details for your area can be found on-line, simply type "local transmitter details" into your search engine.

5.2.4 Multiple Region

If you use Auto Scan or Manual Scan menu, and you receive signals from two or more transmitters the Multiple Region menu will open.

1. To perform a Multiple Region selection, simply press OK button.
2. Use the Multiple Region menu to select which transmitter you would like to use.

5.2.5 Reset to Factory Default

1. To perform a full factory reset to default value, simply press OK button. A dialogue will open.
2. Use the numeric button (0~9) to type the password.

3. The confirmation window shown in the image will appear.
4. If you select 'Yes', the STB will be reset to default factory values.

Installation
This will reset the STB to factory default.
(Please note your recordings will not be deleted.)
Do you want to continue?
Yes
No

5.3 Settings

5.3.1 A/V Settings

1. Select the desired TV output options with the ▲/▼/◀/▶ buttons.
2. Press the OK button to save your chosen settings and exit the dialogue.

- HD/SD: Select HD for HDMI or SD for SCART/Composite.
- SCART: Select the SCART type (option only enabled in SD mode)
- Screen Ratio: Select the screen ratio (16:9 or 4:3)
- Display Format: Select the display format (Auto, Pillarbox or Zoom) (16:9)
- Video Format: Select the video format (1080p, 1080i, 720p, 576p, 576i or auto). HD Mode only.
- Dolby Digital (DD): If you set it to enabled, you can hear Dolby Digital audio in preference to other audio formats when the broadcasting contents are encrypted with Dolby-Digital audio format.
- Digital Audio: If you set it to enabled, you can hear Dolby Digital audio through AC-3 decoder connected by RCA output.
- Audio Delay: Select the audio delay time to synchronize the audio with the video.

5.3.2 Language

1. Select the language options using the ▲/▼/◀/▶ buttons.
2. Press the OK button to save your chosen language.

- Display: Change the language used for the OSD and Menus.
- Audio 1-2: Choose the preferred audio language for broadcast.
- Subtitle 1-2: Choose the preferred subtitle language.

5.3.3 Parental Control

You can block access to particular channels by age level. The user needs to enter a password in order to watch a blocked channel.

1. To change the password, press the ◄/► buttons, a dialogue will open.
2. Use the numeric buttons (0-9) to type in the new password.
3. You will be prompted to reconfirm your password. Type it in a second time.

1. Set the desired rating level with ◄/► buttons.
2. Press the OK button to save and exit.

- View All: All channels can be watched.
- 7: Channels rated over the age of seven are PIN protected.
- 12: Channels rated over the age of twelve are PIN protected.
- 15: Channels rated over the age of fifteen are PIN protected.
- 18: Channels rated over the age of eighteen are PIN protected.

You have to enter the password to watch the channels which are blocked by the age level.

1. Set the guidance option with ◄/► buttons. If this option is 'On', when unsuitable material is on TV from 05:30 to 21:00, a blank screen will be displayed.
2. Press the OK button to save and exit.

5.3.4 Standby Settings

1. Choose the desired options with the ▲/▼/◀/▶ buttons.
2. Press the OK button to save your setting and exit the dialogue.

- Power save Mode: Select the Power save mode.
- Power save mode for Clock: Select on/off (only applicable if first option is "On").
- Auto OTA: Select the Auto OTA mode.
- Auto OTA Start Time / End Time: Set the Auto OTA time zone.

5.3.5 OSD Display

1. Choose the desired options with the ▲/▼/◀/▶ buttons.
2. Press the OK button to save your setting and exit the dialogue.

- Banner display time: Banner will remain onscreen for the selected time. (1~9 seconds).
- Screen Saver: The Screen Saver function protects the screen from image burn on static images.

  The following options can be selected.

  (Disable, 5, 10, 20, 30, 60 and 120 Minutes)
- Radio Screen Saver: The Radio Screen Saver function protects from image burn when listening to a Radio channel.

  The following options can be selected.

  (Disable, 10 seconds to 120 Minutes)
- OSD Transparency: Select the OSD transparency level. (Low, Medium, High).
- Teletext Transparency: Select the Teletext transparency level. (Low, Medium, High).
- VFD Display : Select VFD display mode (Channel number + Name or Channel Name)

5.4 PVR

5.4.1 Record Setting

You can enable or disable the Time shift function in this window. The Timeshift buffer is set to 2 hours, if enabled, this cannot be changed.

1. Select the desired options with the ▲/▼/◄/► buttons.
2. Press the OK button to confirm your choice, and exit the dialogue.

- **Hard Drive**: If this option is 'on', the hard disc is always 'spun up' (i.e. operating). If the option is 'off', the hard disc goes into sleep mode. Whenever you perform a disc-based operation (i.e. recording or playback), the disc is spun-up. This saves *minimal* power, but it takes time for the drive to 'wake from sleep'.
- **Time shift:** If selected 'on', the STB will automatically record the channel being watched (to a temporary buffer – not a file). You can pause, rewind etc. 'live TV' in this mode. If selected 'off', press the **PAUSE** button to activate the temporary record buffer.
- **Jump time:** If 'Yellow' key is pressed during file playback (when time bar is displayed), the file playback will jump the set time.

5.4.2 Scheduled Recordings

Scheduled Recordings shows the programmes that are being recorded now and have been booked for recording but have not yet been recorded.

1. Guide Setting: Single, Series, Recommendation recording. Refer to chapter 7.2.3.
2. User manual Setting: Refer to chapter 7.2.3.

Scheduled Recordings
25/Oct 17:16
No. Mode Date Start End Title
1 DAILY --/-- 18:15 18:15 BBC ONE
2 WEEKLY Mon 17:16 18:16 BBC THREE
3 WEEKDAY --/-- 17:17 18:17 BBC ONE
4 SERIES Mon 25/10 20:00 20:30 EastEnders [BBC ONE]
5 SINGLE Mon 25/10 20:00 20:30 University Challenge [BBC TWO]
EXIT Exit Move i Information GUIDE Guide Delete Add Edit Start

- **Information**: Display Scheduled Record Programme information
- **Guide**: Go to Guide Mode
- **Delete**: User can Delete Scheduled Recordings

- **Add**: User can Add New Scheduled Recordings manually.
- **Edit:** User can Edit Scheduled Recordings and additional data.
- **Sort**: Sort Scheduled Recording list.

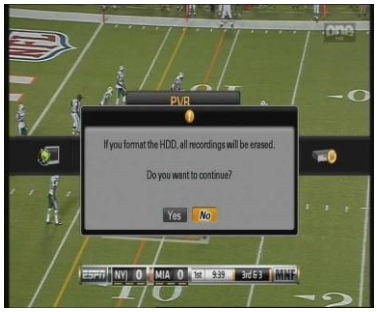
5.4.3 Library

1. Pressing Library once displays the Recorded files.
2. Pressing Library twice allows you to select storage device, including external if connected.

- **▲/▼button**: Select the File with the ▲/▼buttons.
- **◀/▶button**: Change the functions (Play, Delete, Rename, Lock)
- **+/- PG button**: Change the Previous Page / Next Page.
- **OK**: Operate the functions with selected File
- **I:** Display selected File information.
- **RED button:** Delete the selected file.
- **Green button:** Copy and Move data to USB.
- **Yellow button:** Create folder.
- **Blue button:** Sort the selected file.

5.4.4 Format HDD

1. If you press the OK button in this dialogue all files on the HDD will be erased.
2. You will need to enter your PIN and confirm.



TAKE EXTREME CARE WITH THIS OPTION AS THERE IS NO WAY TO RECOVER YOUR RECORDINGS AND MEDIA FILES!
IT TAKES ABOUT 5 MINUTES TO FORMAT HDD.

5.5 Advanced

5.5.1 OTA Upgrade

1. You can upgrade to the latest software. The receiver checks whether the new S/W is released on the OTA TP.

- Channel: Select the OTA TP Channel.
- Frequency: Select the OTA TP frequency.
- Modulation: Select the TP modulation (DVB-T or DVB-T2).
- Scan Mode: Select Scan mode (Auto, Manual)
  - Auto mode can scan all frequencies
  - Manual mode can scan the OTA data in the selected frequency.

5.5.2 USB Firmware Upgrade

You can transfer the system software (firmware) between the STB and a USB drive ("memory stick" or HDD.)

1. Connect the USB device to the Host port on the front or back panel of the STB.

1. Select "USB to STB" and "Yes" to begin data transfer. The warning dialogue shown below will remain onscreen during the update.
2. The STB will reboot automatically once the firmware has been updated.
3. We recommend performing a Factory Reset after upgrading the software.

DO NOT DISCONNECT THE USB CABLE / DEVICE UNTIL THE TRANSFER IS COMPLETED!

5.5.3 Media Settings

1. You can set the Media Settings

- Slide Show Time: Set the display time of the Image viewer
- MP3 Play Mode: Set the MP3 Play Mode
- Media Format HDD: Separate the Media HDD Area and the Recording HDD Area
- DivX Certification: Select the DivX Registration or the DivX Deregistration

ABOUT DIVX VIDEO: *DivX® is a digital video format created by DivX,Inc.*

This is an official DivX Certified device that plays DivX video.

Visit www.divx.com for more information and software tools to convert your files into DivX video.

ABOUT DIVX VIDEO-ON-DEMAND: *This DivX Certified® device must be registered in order to play DivX Video-on-Demand (VOD) content.*

To generate the registration code, locate the DivX VOD section in the device setup menu.

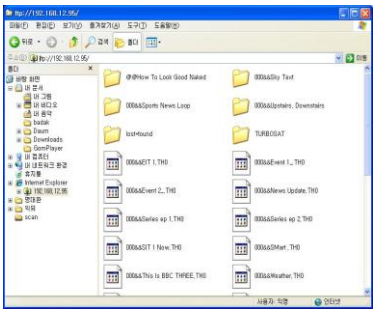
Go to vod.divx.com with this code to complete the registration process and learn more about DivX VOD.

5.5.4 Network Setting

1. To use the network functions via LAN port, set the network parameters correctly. Those parameters are similar to the network environment setting in your PC.

Connect to PC

1. When you have finished Network Setting, select the OK button.
2. Select the Network Setting menu for IP setting. Check the IP Address.
3. Play the windows search of your PC for contact FTP site of STB. Put in IP address of STB.



5.5.5 Edit Channel

1. You can choose edit channel Group. Select the Group or FAV (If you have made Favourite Lists)

2. If you choose The Channel Group, you can delete the selected channel list on the Mode

3. If you choose The Favourite Group, you can delete the selected favourite list on the Mode

5.6 Information

5.6.1 System Information

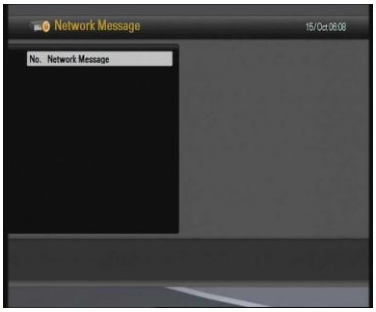
You can check system information such as; Model ID, Hardware version and Software version in this dialogue.

5.6.2 HDD Information

This window allows you to see the following HDD details: Total size, Free size, Used size.

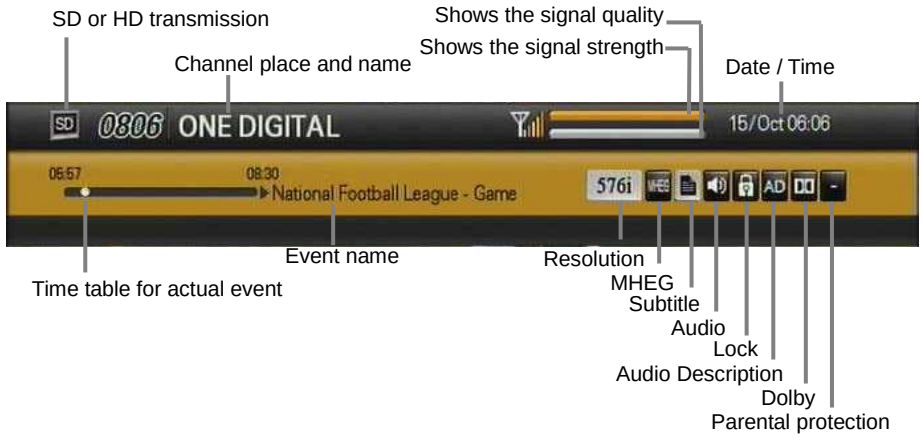
5.6.3 Network Message

This window allows you to see the Network Message at the booting time



6. Viewing General Information

6.1 Banner Information



1. Press the **INFO** button to display the channel Information bar for a few seconds. The display duration is set in the OSD Display MENU.

   * The output resolution is also shown on the top left corner of the screen.

To view the extended programme information:

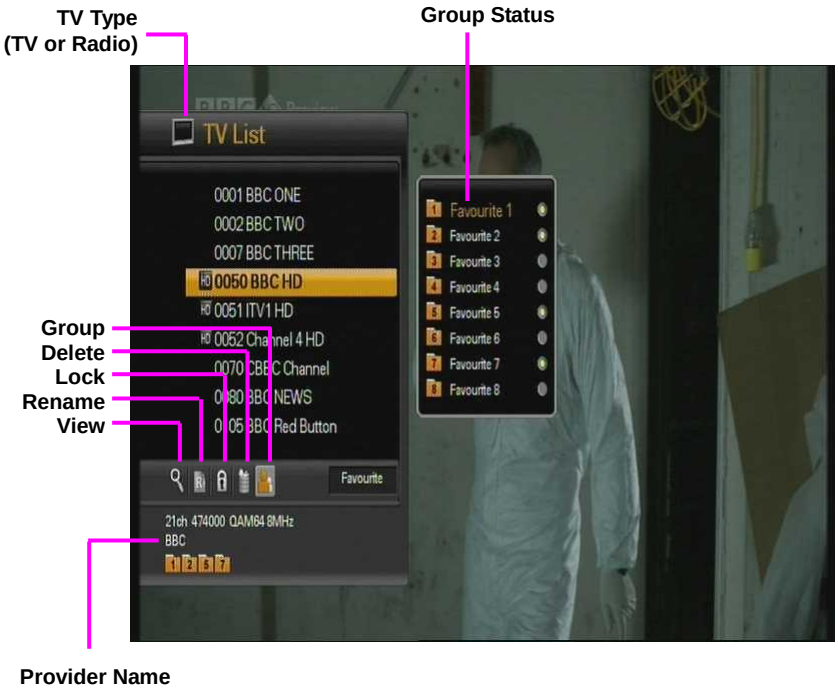
1. Press the **INFO** button (while channel information bar is visible) to display the extended programme information. The information bar remains onscreen when extended information bar is shown.
2. Press the ◄/► buttons to view further programme information page.
3. Press the **EXIT** or **INFO** button to hide the information bar and extended programme information.

30/Oct 12:50 ~ 14:45 [Movie]
Clockwise
Manic comedy about a headmaster who sets out to give an important speech, but boards the wrong train - the first set-back in a hysterical race against the clock. [1986] [AD,S]
0010 ITV3
30/Oct 12:41
Clockwise

6.2 Changing between TV & Radio

Press the **TV/RAD** button to switch between TV and Radio channels.

6.3 TV or Radio Channel Lists



Note: HD channels will only be shown if available in your area

6.3.1 Displaying and using the channel list

1. Press the **CH.LIST** button to show the channel list.
2. Press the ▲/▼ buttons to move the selection cursor up and down the channel list.
3. Press the OK button to choose / watch the highlighted channel.
4. Press the **EXIT** button to close the channel list window.

1. To choose a channel with the numeric buttons.
2. Simply press the '3' button to watch channel 3, or '1' and '0' (in quick succession) to select channel 10.

   A $ symbol next to a channel name denotes Pay TV and a subscription is required.

6.3.2 Understanding and Using Mode Commands

The icons shown at the bottom of the channel list provide access to a number of "modes". Modes are used to perform particular types of operations in the open window.

1. Press ◄/► buttons to select the desired mode.
2. The selected mode icon is highlighted, and the active mode name is shown on the label to the right of the icons.
3. View mode is automatically selected when you open the channel list.

Delete Mode

1. Select the Delete mode (Trash) icon with the ◄/► buttons.
2. Select channel you want to delete with the ▲/▼ buttons.
3. Press the OK button, and a tick will be shown to the right of the channel name.
4. Press the **EXIT** button to delete the channel, and exit the dialogue.

Rename Mode

1. Select the Rename mode (R) icon with the the ◄ /► buttons.
2. Select the channel you want to rename with the ▲/▼ buttons, and press the OK button. A small name editing window will be displayed.
3. Choose each letter of the new channel name with the ▲/▼/◄/► buttons.
4. Press the OK button to enter each letter.
5. After renaming, press the "Save" icon (see right)
6. Press the **EXIT** button to leave the dialogue.

Lock Mode

1. Select Lock mode (Padlock) icon with the the ◄/ ► buttons.
2. Select the channel that you want to lock with ▲/ ▼ buttons, and press the OK button.
3. Set the password. A Lock icon will appear on the left of the Channel name. This can be cancelled by pressing the OK button.
4. Press the **EXIT** button to save and exit.

Favourite Mode (Creating Favourites)

1. Select the Favourite mode (Two people) icon with the ◄/► buttons.
2. Press the OK button, and a small Favourite Window will appear to the right of the channel list.
3. Choose the group number with the ▲/▼ buttons, and confirm by pressing the OK button. To cancel the confirmation, press the OK button again.
4. Use the ▲/▼ buttons to choose, and press the OK button to add them to the Favourite group. Press the OK button again if you accidentally assign a channel to a group.
5. Press the **EXIT** button (twice) to save and exit.

6.4 Language

While watching TV or listening to Radio, press the **LANG** button. You can select an option (Audio and Subtitle Language). If you want to change the option mode, press the ◀/▶ button.

6.4.1 Audio Language

1. Select the 'Audio' using the ◀/▶ buttons.
2. Press the ▲/▼ buttons to select a desired audio language.
3. Press the OK button to change the audio language.

6.4.2 Subtitle Language

1. Select the 'Subtitle' using the ◀/▶ button.
2. Press the ▲/▼ button to select a language.
3. Press the OK button.
4. If the selected language is different from what is available, you can't watch the subtitle.

Audio Delay Pop up: This function is to set synchronization for surround sound/amps.

6.5 Display and Video Format

While watching TV or listening to Radio, you can select an option (Display and Video Format).

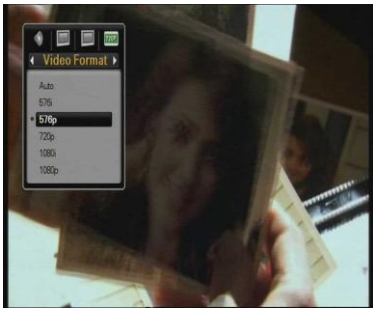
6.5.1 Display Format

1. Press the **WIDE** button to set display format of the STB. (Auto, Pillarbox or Zoom)
2. Press the OK button to save and exit.

6.5.2 Video Format

1. Press the **V.FORMAT** button to set Video format of the STB. (1080p, 1080i, 720p, 576p, 576i or Auto)
2. Press the OK button to save and exit.

This option is not available in SD mode.



6.6 Favourite

While watching TV or listening to Radio, press the **FAV** button. You can see a small pop-up window. You can select a Favourite group.

1. Select the 'Favourite' using the ◀/▶ buttons.
2. Press the ▲/▼ buttons to select a group.
3. Press the OK button, then you can watch the channel list of selected group.

6.7 GUIDE

Press the **GUIDE** button and the electronic channel guide appears if applicable.
Time intervals are arranged in a row and Channel lists are shown in a column.

6.7.1 GUIDE Information

1. Press the ◀/▶ buttons to change time interval.
2. Press the ▲/▼ buttons to change the channel, and then the detailed GUIDE information will appear. The small screen in the left will only be changed if you press the OK button on the channel list.
3. Press the **EXIT** button to exit.

Freeview TV Guide
30/Oct 12:56
12:00 ~ 14:15
Home and Away [Drama]
Penn continues to torment Alf. Paulie and Angelo go to the races. Romeo breaks up with Indi. Liam distances himself from Bianca. John decides to play April at her own game. [S]
0030 FIVER
0031 FIVE USA
0034 ESPN
0038 QUEST
0043 Gems TV
Home and Away
Journey To The Center of The Earth
Live: St Johnstone v Celtic
Mission: Impossible
The Ultimate Fishing Show
Close
Move, Select, Reservation, Search, Previous day, Next day
Scheduled Recordings

*Press the **REC** button to reserve channels by event. If you want to know the detailed description about scheduling a recording, refer to the description in chapter 7.2.3.*

6.8 Search

6.8.1 Keyword Search

1. Press the **Search (Green)** button and then small dialogue will appear.
2. Select the **Keyword Search** option.

1. A small editing window will be displayed.
2. You can enter the Keyword using the ▲/▼/◄/► /numeric buttons and OK button.
3. Select save icon to search the EPG.
4. Scroll through list and press OK button on desired programme to set a recording or reminder.

6.8.2 Genre Search

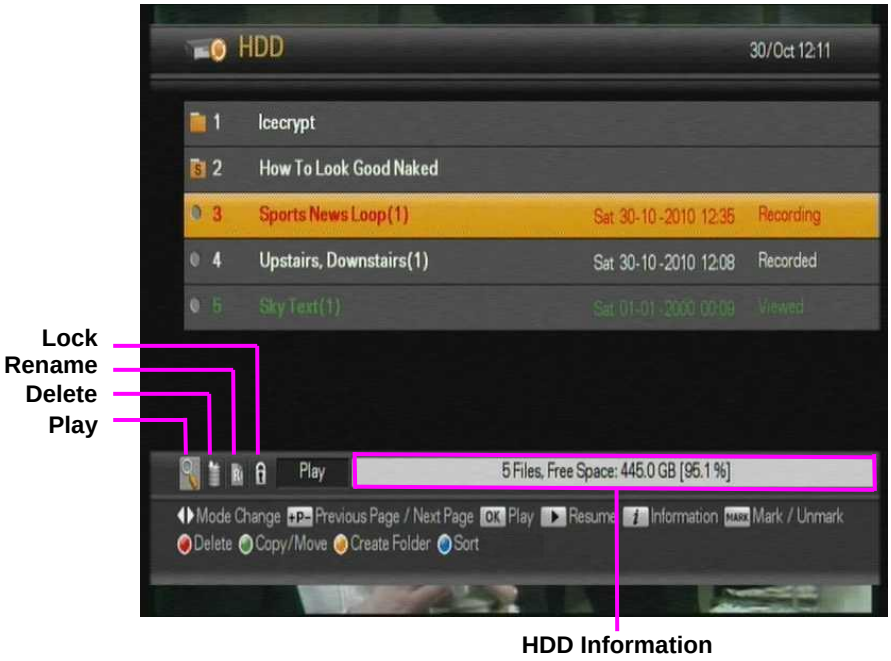
1. Press **Search (Green)** button and then small dialogue will appear.
2. Select the **Genre Search** option.

1. A small window will be displayed.
2. You can select **Genre** using the ▲/▼ buttons and press OK button.
3. Scroll through list and press OK button on desired programme to set a recording or reminder.

7. PVR

This chapter covers the time-shifting, recording, playback, book marking and editing functions.

7.1 File List


HDD
30/Oct 12:11
1 Icecrypt
2 How To Look Good Naked
3 Sports News Loop(1) Sat 30-10-2010 12:35 Recording
4 Upstairs, Downstairs(1) Sat 30-10-2010 12:08 Recorded
5 Sky Text(1) Sat 01-01-2000 00:09 Viewed
Lock
Rename
Delete
Play
Play
5 Files, Free Space: 445.0 GB [95.1 %]
Mode Change +P- Previous Page / Next Page OK Play Resume Information MARK Mark / Unmark
Delete Copy/Move Create Folder Sort
HDD Information

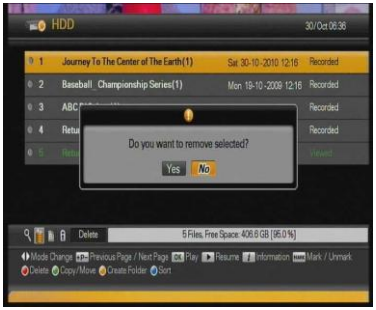
- Play: Select the file to play.
- Delete: Select the file to delete.
- Rename: Select the file to rename.
- Lock: Select the file to lock

7.1.1 Playback mode

1. You can see the detailed file information.
2. Press the **INFO** button to see the information for the selected file.
3. Press the **EXIT** button to hide the information.

7.1.2 Delete mode

1. Select the 'Delete mode' using the **Red** button.
2. Select the file you want to delete using the ▲/▼ buttons.
3. If you decide to delete the file, press 'Yes' on the pop-up window.
4. Press the **EXIT** button to exit.



7.1.3 Copy/Move Mode

1. Select 'Copy/Move mode' using the **Green** button.
2. Select the file to copy/move and press the OK button. And then a small selecting window will be displayed.
3. You can select position to copy/move and the OK button.
4. Press the **EXIT** button to exit.

7.1.4 Create Folder Mode

1. Select 'Create Folder mode' using the **Yellow** button. And then a small editing window will be displayed.
2. You can write each letter of the foler name using the ▲/▼/◀/▶/numeric buttons and select folder creation icon and OK button.
3. Press the **EXIT** button to exit.

7.1.5 Sort Mode

1. Select 'Sort mode' using the **Blue** button.
2. Select date or file name (A-Z) to sort.
3. Press the **EXIT** button to exit.

7.2 PVR Banner

To access the PVR Information Bar, press the ▲/▼/◄/► buttons or any of the "trick play" buttons: **PLAY** (►), **FF** (►►), **REW** (◄◄), **SLOW** (□►).

- The description of icons

: Time Shift status

: Recording status

: Playback and trick status

: Time Shift playback and trick status

: Playback the programme being recorded.

7.2.1 Time Shift

Time Shift function automatically records the current playing programme temporarily.

1. If Time Shift function is enabled in the PVR menu. Time Shift is always working (default is 2 hours). The buffer is reset if you change the channel. You can not disable the Time Shift function in "enabled mode" except when you choose to record the channel.

1. If Time Shift function is set to disabled in the PVR menu. Time Shift will work only when you press the PAUSE (□□) button.

7.2.2 Recording on Live TV

1. Press the **REC** (●) button to record the channel you're watching, this will record the current programme only.
2. If you want to extend the recorded time, press ▶to increase by 5 minute intervals. (The yellow time on the time bar increases to show this).
3. Record mode can only be cancelled by pressing the **STOP** (■) button.

One recording and playback the same channel simultaneously

1. Press the **REC** (●) button on the desired channel.
2. If a recording is already in progress press the **REW**(◄◄) button then use the ►►/◄◄/◄/► buttons to find the position you want to watch from.

1. Press the **PLAY** (▶) button at the desired position.
2. The recorded content will be played from that position until it has caught up with the live transmission.

One recording and view live channel simultaneously

1. You can watch another channel while recording. Press the **REC**(●) button on the desired channel.
2. Press the **CH. LIST** button to view the channel list.
3. Select the channel you want to watch using the ▲/▼ buttons.
4. You can record two channels whilst watching another channel, however there may be restrictions due to the multiplex.

Two recordings

1. Press the **REC**(●) button on the desired channel.
2. When you change the channel, you can record another channel pressing the **REC**(●) button.
3. Two channels will be recorded simultaneously.

1. If you want to stop recording, press the **STOP**(■) button.
2. Select the desired channel using the ▲/▼ button, and press the OK button on the desired channel to select.
3. Press OK button on YES to confirm, or NO to cancel.

Two recording and playback one file simultaneously

1. Press the **REC**(●) button on the desired 2 channels as above.
2. Press the ▤ button to open the file list.
3. Select the desired file using the ▲/▼ buttons.
4. Press the OK or **PLAY** (▶) button to playback the file.
   A. OK : Play from the start.
   B. **PLAY** (▶) : Resume Play from last point.
5. Press the **STOP** (■) button to stop watching the file and return to live TV.

7.2.3 Scheduled Recording

Series and Recommended recording options are available on condition that the broadcaster provides information.

Single Recording

1. In the EPG, select the programme you want to book for recording.

2. Press the **REC**(●) on your selected programme.

3. If you press the **REC**(●) on your selected programme again it deletes the recording.

4. If there are options for Series Record or a Recommended Recording you will be prompted, see next sections.

Scheduled Recordings
25/Oct 17:16
No. Mode Date Start End Title
1 DAILY --/-- 18:15 18:15 BBC ONE
2 WEEKLY Mon 17:16 18:16 BBC THREE
3 WEEKDAY --/-- 17:17 18:17 BBC ONE
4 SERIES Mon 25/10 20:00 20:30 EastEnders [BBC ONE]
5 SINGLE Mon 25/10 20:00 20:30 University Challenge [BBC TWO]
Exit Move Information Guide Delete Add Edit Sort

If you select a standard definition programme, a message asking to replace with its high definition version will appear – If HD broadcasting has the same data as SD.

1. A successful recording booking is listed in the Record List until the time that the programme has started recording.

Scheduled Recordings
30/Oct 06:36
No. Mode Date Start End Title
1 SINGLE Sat 30/10 06:45 07:00 My Friends Tigger and Pooh [CITV]
Exit Move Information Guide Delete Add Edit Sort

Series Recording

1. In the EPG, select the programme you want to book for recording. When you select a programme, the icon [S] may show.
2. Press the **REC** (●) button on your selected programme. When the icon [S] shows, a message, 'SINGLE REC' or 'SERIES REC' will pop up. If you select 'SERIES REC', the series will be booked for recording.
3. If there is an options for Recommended Recording you will be prompted, see next section.

If you select a standard definition programme, a message asking to replace with its high definition version will appear – If HD broadcasting has the same data as SD.

1. A successful booking is listed in the Record List until the time at which the entire series has started recording.
2. Recorded programmes move to and shows in a Series Folder for that programme.

Recommendation Recording

1. When you make a Single or Series recording, if the [R] icon shows you will be prompted to record other recommended programmes of the same genre.
2. The Recommended programmes will be listed in a pop up box, along with the options to record "with Recommendation" or "without Recommendation".
3. Select your preference and press OK to confirm. If you select "without recommendation" the original programme is recorded only. If you select "with recommendation" the original recording AND the recommended recording will take place.

If you select a standard definition programme, a message asking to replace with its high definition version will appear – If HD broadcasting has the same data as SD.

< Booking Conflict >

1. When you try to book more than two programmes at same time, the conflict message, 'Alternative Instance' and 'Manual Method' will pop up.
2. If you select 'Alternative Instance', the receiver will scan for alternative showing times of the programmes listed. It will automatically book this for you. If an alternative method cannot be found it will ask you to resolve conflict manually.
3. If you select 'Manual Method', you can select the programme that you want to delete in the record list to resolve the conflict.

< Programme Reminder >

Set a reminder message to view a programme, without recording.(Once set the programme will be highlighted in Yellow in the EPG).

1. In the EPG, select the programme you want to be reminded of.
2. Press the **REC** (●) button on your selected programme.
3. Select "Reminder" from the pop up menu.
4. Selected programme will be highlighted in yellow.
5. To delete reminder press **REC** (●) button again.

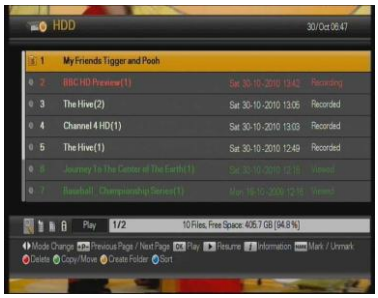
Adding a Manual Timer

You can set a manual timer from the Scheduled Recordings list (**REC.LIST** button).

1. Select **Green** button to Add a new timer.
2. Use ▲/▼/◀/▶buttons to edit the timer details.
3. Once all details are entered use the OK button to save the timer.
4. To edit a manual timer use the **Yellow** button. (You cannot edit any recordings made from the EPG).

7.2.4 Playback of a recorded programme

1. Press the button to open the file list.
2. Select the file you want to watch using the ▲/▼ buttons.
3. Press the OK or **PLAY** (▶) button.
   A. OK: Play
   B. **PLAY** (▶): Resume


HDD
30/Oct 06:47
1 My Friends Tigger and Pooh
2 BBC HD Preview(1) Sat 30-10-2010 13:42 Recording
3 The Hive(2) Sat 30-10-2010 13:05 Recorded
4 Channel 4 HD(1) Sat 30-10-2010 13:03 Recorded
5 The Hive(1) Sat 30-10-2010 12:49 Recorded
Play 1/2
10 Files, Free Space: 405.7 GB (94.8 %)

1. Press the ◀/▶ buttons or trick buttons such as REW, FF, etc., if you want to see the status of playback.

1. Press the numeric buttons (0~9) in Playback mode.
2. If you press "55", play position will jump to 55% of file duration.
3. Press the **STOP** (■) button to stop playback and return to File List.
4. Press **EXIT** to return to Live TV.

Jump in playback mode

1. You can locate the control position to the desired position using the ◀/▶ buttons.
2. By releasing the ◀/▶ buttons, playback continues from this position.
3. With the time bar displayed press the 'Yellow' button to jump the set time (default time is four minutes).

Bookmark

The bookmark function enables you to set bookmarks within the media file to continue from or target a special position in that file.

1. Play the file you want to watch.
2. Move the control position to the favoured position using the ◀/▶ buttons. Then press the **MARK** button and a small bar will be placed at that position.
3. To delete the Bookmark, move the control position using the ◀/▶ buttons to the desired Bookmark, press the **MARK** button again.
4. Press the **JUMP** button and the control position will jump to the next bookmarked position and playback starts from this point.

- The maximum number of Bookmarks is twenty in a file.
- The first Bookmark is always at the start position of the file.

7.2.5 FF/REW/SLOW mode

These functions are available in Playback mode and Time Shift mode.

Fast Forward / Speed: x2, x4, x8, x16

1. Press the **FF**(►►) button.
2. If you press the **FF**(►►) button continuously, speed will be increased up to 4 times.

- : Fast forward icon on Playback mode.
- : Fast forward icon on Time Shift mode.

Rewind / Speed: x2, x4, x8, x16

1. Press the **REW**(◄◄) button.
2. If you press the **REW**(◄◄) button continuously, speed will be increased up to 4 times.

Slow

1. Press the **SLOW**(□►) button.
2. If you press the **SLOW** (□►) button continuously, speed will be decreased up to 1/4 times.

7.2.6 Set Repeat, Copy and Cut block

You can set the block to Repeat, Copy and Cut the recorded file on the PVR Banner.

1. Play the recorded file.
2. Locate the control position to the favoured starting position using the ◀/▶ buttons.
3. Press the **A-B** button to set the start point and then move the end point using the ◀/▶ buttons.

1. Press the **A-B** button again on the end point and then a pop-up window is displayed.
2. You can select the function such as Repeat block, Copy block or Cut block using the ▲/▼ buttons.
3. Press the OK button to start repeating, copying or cutting block.
4. Press the **EXIT** button or the **A-B** button to cancel setting block.

- Repeat block: Select to play and repeat the desired section.
- Copy block: Select to copy the desired section as a new file on the HDD.
- Cut block: Select to cut the desired section from the recording, this file is not saved and cannot be restored once selected.

8. Multimedia

Press the **Media** button and Multimedia menu appears on screen.
You can select Multimedia function, press ◄/►
to select a category

- Media Player
- MP3 player
- Photo album

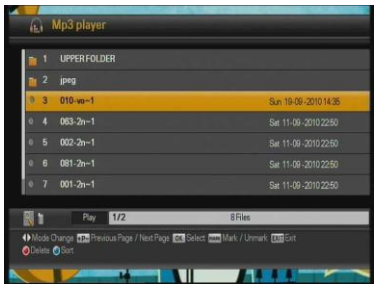
Press ▲/▼ to select the device.

8.1 Media Player

1. Select the Media Player and Device
2. Select the File list.
3. Press OK to Play the file.

8.2 MP3 Player

1. Select the MP3 Player and Device
2. Select the File list.
3. Press OK to Play the file.



8.2 Photo album list

1. Select the Photo album and Device
2. Select the File list.
3. Press OK to Play the file.

Additional Information

A.1 Troubleshooting

There are many factors that can cause receiver problems. Please take a look at the troubleshooting table below.

Do not open the unit as this may cause damage to the STB, your property or yourself.

Problem	Cause	Solution
The front panel doesn't display any message.	The power cord is not plugged in or the unit is turned off.	Check that the power cable is plugged in to the socket and that the power switch is on. Also check the power switch on the back of the STB.
No picture or sound.	Poor (or Wrong) connection of the STB Audio/Video outputs to the TV.	Ensure that appropriate connectors are used, and are correctly connected.
	Incorrect antenna connection	Connect the antenna cable correctly.
	No or Bad signal message is displayed.	Check other devices connected between antenna and the STB, or adjust the antenna position.
	Audio muting	Press the **MUTE** button to unmute the sound. Also check amp or TV volume (and input) settings – if applicable.
	TV Power is off.	Turn on the TV.
	Wrong TV input	Select the correct TV input.
	The STB can't receive a signal.	Check antenna cable to ensure firm connection. Replace if necessary.
	Incorrect values for some tuner parameters.	Set the correct tuner values. Refer to the installation menu section of this manual.
No or bad signal.	Antenna is inappropriate for digital TV reception.	Replace the antenna. Consult a local aerial installer for advice.
	Antenna is underpowered.	Turn on the Antenna Power setting in the STB menu. Add an antenna power booster.

Problem	Cause	Solution
	Antenna is receiving non-TV signals from wireless devices etc.	Reduce the power being supplied to the antenna. Adjust (or replace) the antenna.
	Antenna is damaged.	Replace the antenna. Consult an engineer.
The remote control doesn't work.	The batteries of the remote control are not inserted correctly, or are exhausted.	Check if batteries are correctly inserted. Replace batteries, if necessary.
Poor picture or audio quality.	Low antenna power or signal loss in cabling.	Add an antenna booster or turn on Antenna Power in the STB menus. Check video cables, and replace if necessary.
	Broadcasting fault.	Wait until the broadcaster remedies the fault, or electrical storm etc. has passed.
Some channels are not found when scanning.	Low antenna power or signal loss in cabling.	Add an antenna booster or turn on Antenna Power in STB menus.
	Some channels may require a different type of antenna (UHF/VHF)	Replace the antenna. Consult a qualified engineer/local aerial installer for advice.

A.2 Technical Specifications

1. Tuner & Demodulator

Parameter	Specifications
Input Connector	1 X IEC169-2, female
Loop through Connector	1 X IEC169-2, male
Input Signal Frequency	VHF 174~230 MHz, UHF 470~860MHz
Input Signal Level	-90~-20dBm
Input impedance	75 Ohms nominal
IF Centre Frequency	36.167 MHz
IF Bandwidth	6.66 MHz, 7.61MHz
Waveform	OFDM
Transmission mode	2K FFT, 8K FFT
Constellations	QPSK, 16QAM, 64QAM
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Guards intervals	1/4, 1/8, 1/16, 1/32
FEC decoder	Reed-Solomon Viterbi Decoder, for 16 parity bytes Block lengths 204 byte
MCPC and SCPC	Supported

2. MPEG

Parameter	Specifications
Transport Stream	MPEG-2 ISO/IEC 13818 Transport Stream Specification
Video	MPEG-2 MP@ML, MPEG-4 H.264/AVC
Audio	MPEG-1/2 Audio Layer 1/2/3, Dolby Digital Plus, MPEG-2/4 AAC
Video bit rate	1.5-15 Mbps
Active pixel	1920x1080p50, 1920x1080i, 1280x720p, 720x576p, 720x576i
Aspect ratio	4:3 or 16:9
Audio Mode	Stereo, Dual channel, Joint stereo, Mono
Audio Sampling frequency	32 kHz, 44.1 kHz, 48 kHz

3. Connector

Port	Specifications
RF in	IEC 169-2 Female type
RF out	IEC 169-2 Male type
Composite output	RCA (VIDEO) RCA (Audio L/R)
HDMI output	HDMI 1.3 compliant
S/PDIF	Optical type
SCART output	TV (RGB or CVBS, Audio L/R, Function SW) VCR (CVBS, Audio L/R, Function SW)
Serial port	RS232C
USB2.0 port	Host x 2ea
LAN port	RJ45

4. Power Supply

Parameter	Specifications
Input voltage	90~260VAC (SMPS type)
Power consumption	Operation: max. 28W Standby : under 1W (Power save mode without clock)
Protection	Separate internal fuse Lighting protection Lighting protection

5. Environmental

Parameter	Specifications
Operating temperature	0℃ ~ 45℃
Storage	-10℃ ~ +50℃
Storage humidity range	5 ~ 90% Rh Non condensing
Operating humidity range	10 ~ 85% Rh Non condensing
Weight	3.4 kg
Dimension(H x W x D)	60mm x 400mm x 270mm

A.3 Remote Control Code List by TV Manufacturer

A.R.Systems	0005	0173	0062	0039
	0047			
Accent	0001	0005	0062	
Acer	0140			
Adcom	0071			
ADL	0125			
Admiral	0009	0035	0043	0013
	0024			
Adyson	0019			
AEA	0005	0062		
AEG	0151	0067	0118	
Agashi	0019	0024		
AGB	0058			
Aiko	0001	0005	0062	0019
	0038	0003	0044	0033
	0016	0024		
Aim	0005	0042	0062	0092
	0018	0083	0100	
Aiwa	0082	0161	0149	
Akai	0033	0018	0038	0150
	0005	0044	0091	0016
	0003	0001	0092	0020
	0089	0085	0013	0058
	0086	0066	0062	0061
	0049	0072	0019	0024
	0015	0040	0067	0115
	0161	0048	0076	0129
	0163			
Akashi	0108	0001		
Akiba	0020	0025	0047	0005
	0062			
Akira	0043			
Akito	0005	0062		
Akura	0005	0062	0080	0042
	0001	0020	0025	0024
	0085	0164		
Alaron	0019			
Alba	0005	0115	0062	0085
	0001	0043	0037	0038
	0080	0032	0020	0019
	0023	0013	0052	0004
	0161	0046	0163	
Alkos	0003			
All-Tel	0110			
Allstar	0005	0062		
Amplivision	0037			
Amstrad	0001	0058	0024	0038
	0020	0005	0062	0044
	0042	0034	0115	0076
	0164			
Anam	0005	0062	0001	0077

Anam National	0005	0062	0077	
Andersson	0118	0117		
Anglo	0001	0024		
Anitech	0001	0024	0005	0062
	0025			
Ansonic	0037	0005	0062	0001
	0080	0039	0013	0041
	0023	0145		
Apollo	0048			
ArcenCiel	0012			
Arcam	0019			
Ardem	0051	0085	0005	0073
	0062			
Aristona	0062	0005		
ArthurMartin	0013			
ASA	0010	0165	0006	
Asberg	0005	0062		
Asora	0001			
Astra	0005	0062		
Asuka	0020	0019	0024	0025
ATD	0081			
Atlantic	0005	0062	0019	
Atori	0001			
Auchan	0013			
Audiosonic	0001	0005	0039	0103
	0062	0012	0085	0086
	0037	0024	0020	0051
Audioton	0051	0037	0024	
Audioworld	0081			
Autovox	0023			
AVP	0161			
AWA	0002	0004	0001	0039
	0042	0005	0062	0019
	0067	0011	0024	0142
Axxent	0001			
Axxon	0085			
B&D	0125			
Baird	0012	0175	0030	0007
	0018	0122		
Barco	0013			
BasicLine	0039	0005	0013	0080
	0062	0001	0020	0025
	0047	0029	0115	
Bauer	0100	0001		
Baur	0001	0060	0017	0057
	0005	0062	0016	0033
	0149			
Beaumark	0015			
Beko	0085	0003	0051	0037
	0005	0043	0115	0062
	0067	0086	0101	

Belson	0168	0166		
Bennett	0062	0005		
BenQ	0158			
Beon	0005	0062	0043	
Berthen	0080			
Best	0037			
Bestar	0005	0062	0037	0039
Bestar-Daewoo	0039			
BlackDiamond	0118	0103	0115	0062
	0104	0092		
BlackStar	0023			
BlackStrip	0003			
Blackway	0025	0020		
Blaupunkt	0016	0060	0017	0047
	0014	0004		
BlueSky	0005	0085	0115	0052
	0080	0086	0162	0062
	0020	0025	0047	0161
BlueSky	0168	0101	0141	
BlueStar	0025			
Bondstec	0023			
Boots	0001			
BPL	0005	0062	0025	
Brandt	0071	0012	0026	0028
	0030	0063		
Brandt Electronique	0026	0028		
Brinkmann	0005	0062	0080	0059
	0043	0051		
Brionvega	0005	0062	0034	
Britannia	0019			
Brother	0024			
Bruns	0051			
BSR	0013	0033		
BTC	0020			
Bush	0080	0020	0013	0001
	0004	0005	0038	0025
	0032	0035	0039	0059
	0024	0033	0115	0052
	0018	0151	0129	0081
	0062	0085	0159	0161
	0096			
Canton	0020			
Capsonic	0024			
Carad	0069	0005	0062	0080
	0115			
Carena	0047	0005	0062	
Carrefour	0004	0006	0005	0062
Carver	0014			
Cascade	0001	0005	0062	
Casio	0005	0062	0013	
Cathay	0005	0062		
CCE	0005	0062		
Celestial	0102	0103	0104	
Centrex	0097	0113		
Centrum	0115			
Centurion	0005	0062		
Century	0023			
CGE	0037	0013	0043	0023
Cim line	0001	0020		
Cinex	0076	0151		
City	0001			
Clarivox	0043	0005	0062	0006
Clatronic	0005	0037	0038	0085
	0020	0024	0062	0023
	0001	0076	0067	0118
Clayton	0115			
CMS	0019			
Cobolt	0113			
Combitech	0161			
Concorde	0001			
Condor	0005	0062	0037	0019
	0001	0025	0023	0043
	0041	0013	0024	
Conia	0093	0104	0166	0103
Conrac	0101			
Conrad	0005	0062		
Contec	0019	0001	0002	0004
	0024	0005	0062	
Continental Edison	0012	0026	0052	
Cosmel	0001	0005	0062	
Crosley	0023	0013		
Crown	0001	0084	0037	0051
	0005	0062	0052	0085
	0067	0086	0043	0018
	0078	0029	0115	
CS Electronics	0019	0020	0023	
CTC	0023			
CTX	0158			
Curtis Mathes	0009			
Cybertron	0020			
Cytronix	0136			
D-Vision	0005	0164	0062	
Daewoo	0074	0039	0162	0055
	0079	0005	0062	0001
	0019	0020	0116	0161
	0112	0138	0153	0110
Dainichi	0020	0019		
Daitsu	0132			
Dansai	0005	0062	0024	0003
	0019	0001	0004	0018
Dansette	0042			
Dantax	0037	0051	0085	0067
	0086	0161		
Datsura	0018			
Dawa	0001	0005	0062	
Daytek	0081	0123	0083	0142

Dayton	0123			
Daytron	0001	0039	0005	0062
deGraaf	0018	0013	0061	0035
DEC	0099	0108	0113	
Decca	0058	0005	0062	0116
	0161			
Deitron	0005	0062	0039	0020
Denko	0024			
Denver	0005	0062	0067	0121
	0065			
DER	0175			
Desmet	0005	0062	0001	
Diamant	0005	0062		
Diamond	0024	0081	0001	0105
	0019	0038	0108	0103
Digatron	0005	0062		
Dighome	0117			
Digiline	0005	0062	0010	0080
DigiLogic	0005	0062		
Digitex	0103			
Digitor	0005	0062	0109	
Digivision	0033			
DigiX	0112			
DIK	0005	0062		
Dixi	0001	0005	0062	0023
DL	0113	0097	0005	0065
	0110			
Domeos	0080			
Domland	0174			
Dream Vision	0155			
DSE	0109	0151	0103	
DTS	0001			
Dual	0030	0059	0005	0062
	0173	0174	0013	0116
	0072	0117	0115	
Dumont	0006			
Dunai	0013			
Durabrand	0005	0145	0062	
Dux	0005	0062		
DVX	0113			
Dynatron	0005	0062		
EasyLiving	0127	0129		
Ecco	0095	0083		
Edison-Minerva	0052			
Elbe	0045	0034	0037	0013
	0005	0062	0020	0016
	0041	0069	0058	0033
Elbe-Sharp	0058			
Elcit	0023	0058	0013	
Elekta	0001	0005	0062	0024
	0025			
Elfunk	0124	0115		
ELG	0005	0062		

Elin	0019	0005	0062	0010
	0061	0033	0013	0001
Elite	0020	0005	0062	
Elta	0001	0024	0019	
Emco	0023			
Emerson	0085	0015	0023	0005
	0062	0038	0006	0025
	0033	0162	0051	0037
	0013	0080		
Emperor	0025			
Enzer	0092			
Erres	0005	0062		
ESC	0005	0062		
Est?le	0013			
Etron	0000	0005	0062	0001
	0013	0103		
Euro-feel	0024			
EuroLine	0005			
Euroman	0019	0024	0005	0062
	0037			
Europa	0005	0062		
Europhon	0005	0058	0013	0062
	0023	0019		
Evesham	0127			
Excel	0005	0062		
Expert	0013			
Exquisit	0005	0062	0023	
Fagor	0005	0062		
FairTec	0168			
FamilyLife	0005	0062		
Fast	0160			
Fenner	0039	0001		
Ferguson	0007	0071	0026	0028
	0175	0012	0063	0005
	0062	0003	0030	0078
	0011	0033	0061	0046
	0115			
Fidelity	0013	0057	0035	0005
	0062	0038	0042	0175
	0019	0024	0161	0033
Finlandia	0018	0165	0061	0033
	0013	0035	0026	0030
Finlux	0010	0005	0062	0085
	0165	0013	0058	0086
	0006	0041	0072	0053
	0049	0151	0048	0043
	0067	0101		
Firstline	0005	0062	0039	0080
	0085	0013	0001	0019
	0023	0162	0041	0018
	0033	0115	0168	0101
	0141	0118		

Fisher	0004	0018	0037	0033
	0013			
Flint	0005	0062	0069	0020
	0047	0024		
Force	0117			
Forgestone	0175			
Formenti	0013	0005	0062	0051
	0019			
Formenti-Phoenix	0019			
Fortress	0009			
Fraba	0005	0062	0037	
Friac	0001	0005	0062	0037
	0055	0069		
Frontech	0023	0024	0035	0001
	0013			
Fujimaro	0110			
Fujitsu	0013	0001	0173	0005
	0062	0033	0107	
FujitsuGeneral	0001	0013		
FujitsuSiemens	0136	0129	0118	
Funai	0080	0024	0042	
Furichi	0108			
Futronic	0024	0099	0108	
Future	0005	0062		
Galaxi	0005	0062	0033	0013
Galaxis	0037	0043	0005	0062
Galeria	0001			
GBC	0013	0001	0039	0020
	0035			
GE	0030	0015	0025	0063
	0026	0012	0028	0071
Geant Casino	0013			
GEC	0013	0033	0005	0058
	0062			
Geloso	0023	0001	0035	0013
	0039			
General	0012	0026		
General Electric	0030	0026		
General Technic	0001			
Genesis	0001	0005	0062	
Genexxa	0020	0005	0062	0042
	0013	0001		
Gericom	0110	0136	0125	0112
Goldfunk	0080			
Goldhand	0019			
GoldStar	0005	0001	0037	0000
	0040	0015	0023	0019
	0062	0013	0033	0012
	0035	0067	0085	0086
	0047			
Gooding	0052			
Goodmans	0074	0129	0115	0005
	0055	0062	0085	0080
	0162	0039	0004	0024
	0058	0001	0052	0038
	0030	0003	0049	0063
	0028	0020	0161	0079
	0159	0112	0139	0065
	0142			
Gorenje	0037			
GPM	0020			
Gradiente	0078	0014	0005	0062
Graetz	0085	0033	0038	0013
	0005	0029	0062	0118
GranPrix	0076			
Granada	0005	0062	0022	0011
	0018	0004	0029	0058
	0048	0028	0063	0013
	0035	0021	0030	0061
Grandin	0005	0062	0001	0013
	0069	0085	0086	0080
	0039	0025	0020	0047
	0115	0110	0168	0112
Gronic	0013			
Grundig	0017	0056	0060	0016
	0006	0052	0005	0046
	0083	0062	0065	0001
	0004	0037	0163	0161
	0139	0015	0142	0030
Grunkel	0118			
H&B	0101			
Haaz	0083			
Haier	0081	0024		
Halifax	0024	0019		
Hammerstein	0024			
Hampton	0019			
Hanimex	0020	0161		
Hanseatic	0005	0062	0055	0059
	0013	0033	0025	0174
	0074	0037	0079	0001
	0040	0085	0101	0051
Hantarex	0001	0005	0062	0058
Hantor	0005	0062		
Harsper	0110			
Harwa	0095	0122	0133	
Harwood	0001	0042	0005	0062
	0052			
Hauppauge	0005	0062		
HCM	0001	0042	0005	0062
	0020	0043	0025	0024
Hedzon	0062	0005		
Hema	0001			
Hicon	0146			
Hifivox	0012			

Higashi	0019			
Highline	0024	0005	0062	
Hikona	0020			
Hinari	0018	0005	0062	0001
	0020	0004	0013	0032
	0046	0052	0024	0161
Hisawa	0025	0020	0047	0069
	0161	0085		
HiSense	0141	0018		
Hitachi	0021	0064	0004	0011
	0048	0013	0030	0058
	0050	0055	0005	0062
	0012	0035	0061	0088
	0074	0090	0015	0116
	0010	0053	0147	0033
	0057	0049	0115	0152
	0117			
HitachiFujian	0011	0021		
Hitsu	0001	0069	0047	0020
HMV	0175			
Hoher	0085	0151	0110	
HomeElectronics	0067			
Homyphon	0005	0062		
Hoshai	0020	0047	0025	
Huanyu	0039	0019		
Hugoson	0167	0125		
Hygashi	0019			
Hyper	0001	0019	0023	
Hypersonic	0033			
Hypson	0005	0062	0085	0086
	0024	0025	0047	0161
	0115	0080	0051	
Hyundai	0005	0110	0062	0083
	0108	0092	0153	0151
Iberia	0005	0062		
ICE	0024	0005	0038	0001
	0062	0020	0019	
Ices	0020	0019		
Ict	0005	0116	0062	
IISonic	0142			
Iiyama	0125	0167		
Imperial	0005	0013	0037	0062
	0041	0033	0043	0023
Indiana	0005	0062		
InFocus	0119			
Ingelen	0052	0069	0085	0013
	0033			
Ingersoll	0001			
Inno Hit	0001	0005	0062	0020
	0058	0023	0025	0118
Innovation	0059	0005	0062	
Innowert	0110	0136		
Inotech	0095	0103		

Interactive	0005	0062	0057	0041
	0013	0033	0037	0012
Interbuy	0001	0005	0024	0023
	0057	0062		
Interfunk	0005	0062	0057	0023
	0013	0033	0037	0012
Internal	0005	0062	0055	0039
	0162			
International	0019			
Intervision	0025	0047	0005	0038
	0040	0059	0051	0037
	0174	0052	0020	0013
	0024	0023	0001	0062
Irradio	0001	0005	0062	0020
	0023	0038		
Isukai	0020	0005	0062	0025
	0047			
ITS	0005	0038	0020	0025
	0024	0019	0001	0062
ITT	0013	0049	0033	0048
	0061	0175	0165	0029
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ITT Nokia	0033	0061	0013	0048
	0049	0165	0018	0029
	0067	0069	0072	0035
ITV	0024	0005	0062	0023
	0039			
JDV	0164			
Jean	0004			
JEC	0003			
JMB	0005	0055	0074	0039
	0062	0046	0161	
Jocel	0084			
Jubilee	0062			
JVC	0078	0004	0175	0038
	0020	0067	0043	0009
	0077			
Kaisui	0020	0025	0005	0062
	0019	0047	0001	
Kambrook	0040			
Kamp	0019			
Kapsch	0013	0033		
Karcher	0005	0062	0037	0069
	0013	0025	0024	0096
	0085	0151	0067	
Kathrein	0062	0005		
Kawa	0038			
Kawasho	0019			
KB Aristocrat	0013			
Kendo	0069	0005	0062	0013
	0059	0057	0037	0040
	0035	0041	0023	0034
	0076	0115	0145	0051

Kennedy	0013	0045		
Kennex	0115			
Kenwood	0010			
Kingsley	0019			
Kiota	0000			
Kiton	0062	0005	0080	
Kneissel	0005	0037	0069	0041
	0039	0055	0062	0045
	0034	0161		
Kobra	0146			
Kolster	0005	0062	0023	0020
Konichi	0001			
Konka	0005	0062	0038	0085
	0043	0020	0075	0065
	0093	0166		
Kontakt	0052			
Korpel	0005	0062		
Korting	0037			
Kosmos	0005	0062		
Kotron	0042	0024		
Koyoda	0001			
Kuba	0013			
KubaElectronic	0013			
Kyoshu	0042	0043	0024	
Kyoto	0013	0019		
L&SElectronic	0110	0085		
LaSAT	0051	0037		
Lavis	0115	0005	0013	
Leader	0001			
Lecson	0005	0062		
Legend	0001			
Lemair	0041			
Lenco	0005	0001	0013	0039
	0062	0065	0115	
Lenoir	0001			
Lesa	0023			
LevisAustria	0005	0062		
Lexsor	0122			
Leyco	0024	0005	0062	
LG	0005	0015	0037	0001
	0040	0131	0000	0062
	0085	0019	0013	0067
	0012	0081	0086	0154
	0168	0144	0137	0023
	0033			
Liesenk&Tter	0005	0062		
Liesenkotter	0005	0062		
Lifetec	0005	0001	0059	0039
	0080	0057	0115	0116
	0062	0020	0024	0127
	0085			
Lloyd's	0000	0001		
Lodos	0115	0117		

Loewe	0057	0073	0098	0005
	0062	0037	0034	0058
Logik	0002	0081	0095	0001
	0175	0024	0038	0000
	0112	0125	0115	
Logix	0080	0059		
Luker	0164			
Luma	0005	0035	0013	0041
	0062	0039	0001	0034
Lumatron	0035	0005	0062	0034
	0013	0033	0024	0007
LuxMay	0005	0001	0062	
Luxor	0118	0035	0049	0053
	0033	0018	0061	0013
	0165	0048	0115	0072
LXI	0015			
Madison	0005	0062		
Magnadyne	0023	0058	0013	
Magnafon	0058	0019	0007	
Magnavox	0005	0062	0004	0097
Magnum	0076	0085	0005	0062
	0086	0135		
Mandor	0024			
Manesth	0005	0062	0024	0003
	0013	0035		
Manhattan	0005	0062	0080	0115
	0132	0013	0096	
Marantz	0005	0062	0042	
Mark	0005	0062	0019	0039
	0001	0085	0086	
Master's	0055	0005		
Masuda	0020	0038	0001	0024
Masuda	0005	0062		
Matsui	0005	0062	0052	0001
	0002	0032	0004	0038
	0044	0046	0035	0047
	0013	0058	0003	0018
	0017	0016	0028	0085
	0161	0115		
Matsushita	0077			
Matsuviama	0065			
Maxam	0024			
Maxdorf	0095			
Maxim	0164	0151		
MCE	0001			
Mediator	0005	0062		
Medion	0005	0085	0101	0059
	0080	0062	0057	0116
	0081	0161	0115	0145
	0159	0127	0112	0135
Megas	0069			
Megatron	0015			
MEI	0115	0005	0062	

Melectronic	0165	0005	0057	0012
	0030	0023	0010	0039
	0001	0049	0053	0019
	0041	0013	0026	0062
	0074	0033	0016	0017
	0079	0085		
Memorex	0001	0015	0077	
Memphis	0001			
Mercury	0000	0005	0001	0062
Merritt	0061	0033	0013	
Metz	0179	0176	0177	0036
	0118	0017	0060	0016
	0005	0062	0065	0080
	0115	0178		
MGA	0015	0005	0062	0020
Micromaxx	0005	0062	0080	0115
	0101			
Microstar	0101			
MicroTEK	0103			
Mikomi	0117			
Minato	0005	0062		
Minerva	0052	0060	0017	0006
	0016	0058	0011	
Minoka	0042	0005	0062	
Mirror	0159			
MistralElectronics	0175			
Mitsubishi	0011	0009	0057	0005
	0015	0004	0175	0060
	0062	0018	0115	
MitsuriGeneral	0013			
Mivar	0037	0019	0068	0058
Monaco	0001			
Morgan's	0005	0062		
Motorola	0009			
MTC	0037	0057	0013	0019
	0033			
MTlogic	0085	0139		
Multibroadcast	0175			
Multitec	0005	0062	0051	0080
	0115	0151		
Multitech	0001	0035	0051	0005
	0037	0062	0019	0023
	0024			
Murphy	0019	0013		
Muskland	0005	0020	0023	0062
MyCom	0142	0015		
Myryad	0062	0005		
NAD	0015	0033	0013	
Naiko	0005	0164	0067	0062
Nakimura	0039	0005	0062	
Naonis	0035	0013		
Narita	0164			
NAT	0022			
National	0022			
NEC	0014	0065	0120	0134
	0004	0047	0001	0039
	0005	0062	0002	0155
	0055	0078	0079	
Neckermann	0005	0016	0037	0149
	0057	0062	0013	0035
	0043	0023	0041	
NEI	0005	0062	0038	0013
Neovia	0110	0142		
Nesco	0023	0161		
Netsat	0005	0062		
Neufunk	0005	0001	0062	0069
	0020	0025	0085	
NewTech	0005	0001	0062	0030
NewWorld	0020			
Nicamagic	0019			
Nikkai	0020	0005	0062	0024
	0003	0019	0001	0004
Nikkei	0085			
Nikko	0015			
Nobliko	0006	0019		
Nogamatic	0012			
Nokia	0033	0013	0049	0061
	0053	0048	0029	0018
	0039	0072	0067	0165
	0069	0012		
Nordmende	0012	0085	0113	0026
	0063	0030	0017	0005
	0062	0028	0013	0129
Norfolk	0013			
Normerel	0005	0062		
Novak	0005	0062		
Novatronic	0005	0010	0039	0062
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Nurnberg	0013	0033		
Oceanic	0013	0033	0018	0048
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Okano	0037	0005	0062	0024
	0001			
Olidata	0142			
Omega	0024			
Omni	0097	0113	0081	
Onwa	0038	0066	0020	0044
Opera	0005	0062		
Optimus	0077			
Optonica	0009			
Orbit	0005	0062		
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Orion	0005	0046	0032	0062
	0085	0002	0001	0024
	0042	0058	0161	0112
	0122			
Orline	0005	0020	0062	
Ormond	0080	0115	0005	0062
Orsowe	0058			
Osaki	0020	0024	0005	0042
	0039	0032	0062	
Osio	0005	0062		
Oso	0020			
Osume	0004	0020	0005	0062
OttoVersand	0149	0004	0009	0057
	0005	0062	0060	0017
	0016	0033	0012	0022
	0023	0001	0025	0030
	0058	0059		
Pace	0161			
Pacific	0005	0062	0116	0085
	0115	0046		
Pael	0019			
Palladium	0037	0005	0041	0085
	0116	0016	0149	0035
	0043	0062	0023	0059
	0013			
Palsonic	0024	0042	0005	0040
	0020	0081	0062	0095
	0000	0043	0096	0122
Panama	0001	0024	0019	0005
	0062	0023		
Panashiba	0000			
Panasonic	0077	0011	0022	0033
	0036	0058	0005	0062
	0013	0061	0169	0000
	0107	0015		
Panavision	0005	0041	0062	
Papouw	0005	0062		
PatheCinema	0013	0019	0037	
PatheMarconi	0012			
Pausa	0001			
Perdio	0013	0005	0019	0025
	0062			
Perfekt	0005	0062		
Philco	0062	0059	0043	0023
	0013	0037	0005	
Philex	0175	0013		
Philips	0062	0005	0016	0175
	0030	0039	0033	0001
	0158			
Phocus	0135	0139	0085	
Phoenix	0005	0062	0037	0051
	0013	0019		
Phonola	0005	0062	0175	0019
Pilot	0062	0005	0084	0083
Pioneer	0094	0002	0005	0014
	0062	0130	0037	0030
	0033	0012	0013	0026
	0051	0057		
Pionier	0037	0051		
Plantron	0005	0062	0024	0001
Playsonic	0085	0005	0029	0086
Policom	0012	0033	0013	0006
	0060			
Polytron	0025			
Poppy	0001			
Portland	0039	0162		
Powerpoint	0052	0005	0062	0081
Prandoni-Prince	0023	0058	0033	0035
Premier	0001	0024		
President	0108			
Prima	0001	0024	0042	0133
Princess	0081			
Prinston	0115			
Prinz	0033			
Profex	0001	0013	0033	0035
Profi	0001			
ProfiTronic	0005	0062		
Proline	0005	0062	0071	0074
	0041	0142		
Prosonic	0005	0062	0037	0039
	0038	0080	0085	0019
Protech	0005	0062	0001	0023
	0024	0043	0080	0025
	0013	0051	0115	
Proton	0015			
Provision	0055	0005	0062	0115
	0085			
PVision	0168			
Pye	0005	0062	0039	0042
Pymi	0001			
Quadral	0020			
Quasar	0023	0077	0110	0001
Quelle	0005	0149	0002	0012
	0057	0060	0016	0033
	0004	0023	0165	0001
	0024	0115	0006	0010
	0080	0062	0017	
Questa	0004			
R-Line	0005	0062	0013	
Radialva	0012	0020	0013	0005
	0062	0026		
Radiola	0005	0062		
Radiomarelli	0058	0023	0005	0062
RadioShack	0005	0062	0015	

Radiotone	0001	0005	0062	0037
	0043	0042	0076	0080
	0024	0115		
Rank	0006			
Rank Arena	0004	0066	0092	
RBM	0006			
RCA	0071	0009	0063	0028
	0030	0092		
Realistic	0015			
Recor	0005	0043	0062	
Rectiligne	0005	0062		
Rediffusion	0033	0061	0004	0165
Redstar	0005	0062		
Reflex	0005	0062	0115	0080
Relisys	0110	0111	0123	0136
Reoc	0085	0074	0162	
Revox	0005	0062	0037	
Rex	0035	0041	0023	0013
	0024			
RFT	0037	0024	0005	0062
	0051			
Rhapsody	0019			
Ricoh	0005	0062		
Rinex	0095	0043		
Roadstar	0115	0001	0043	0005
	0062	0085	0080	0020
	0024	0025	0121	0159
Rodex	0005	0062		
Rover	0004	0111		
Rowa	0024	0081	0084	0001
	0019	0065	0005	0062
RoyalLux	0037	0042	0028	
RTF	1065			
Rukopir	0062	0005		
Saba	0071	0012	0063	0030
	0026	0013	0058	0033
	0054	0028	0061	0077
	0085			
Sagem	0069	0047	0025	0106
	0070			
Saisho	0058	0001	0002	0013
	0024			
Saivod	0005	0164	0062	0118
	0080	0084	0115	
Saka?	0013			
Sakyno	0047			
Salora	0013	0033	0058	0035
	0061	0029	0018	0049
Salsa	0028			
Sambers	0058			

Samsung	0070	0065	0005	0015
	0062	0128	0009	0126
	0001	0037	0024	0019
	0018	0059	0013	0071
Sandra	0019			
Sansui	0005	0089	0062	0083
	0038	0066	0047	0109
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Santon	0001			
Sanyo	0018	0124	0004	0002
	0037	0029	0019	0001
	0013	0005	0011	0062
	0051	0014		
Save	0005	0062		
Saville	0161			
SBR	0005	0062	0175	
Schaub Lorenz	0061	0085	0033	0067
	0051	0039	0168	
Schneider	0116	0005	0062	0059
	0174	0173	0030	0023
	0038	0033	0020	0080
	0115	0013	0076	0085
	0162	0161	0164	0006
Scotland	0013			
Scott	0121	0015		
Sears	0015			
Seaway	0074			
Seelver	0062	0115	0005	
SEG	0005	0062	0115	0145
	0080	0052	0001	0013
	0024	0074	0004	0023
	0034	0019	0118	0020
	0162	0160	0085	
SEI	0149	0013	0058	0005
	0062			
Sei-Sinudyne	0058	0149	0005	0062
Seitech	0125			
Seleco	0035	0034	0013	0041
	0038	0004	0024	0165
	0045			
Sencora	0001			
Sentra	0003	0020	0001	
Serino	0069	0047	0019	0009
Sharp	0009	0004	0078	0175
	0058	0118	0094	0143
Shintoshi	0005	0062		
Shivaki	0005	0062	0046	0039
	0015			
Show	0043	0001		
Siarem	0013	0058		
Siemens	0016	0060	0033	0017
	0005	0062		
Siera	0005	0062	0065	

Siesta	0037			
Silva	0005	0062	0019	0033
	0076			
SilvaSchneider	0151			
Silver	0004	0005	0047	0033
	0062	0086	0013	
SilverCrest	0115	0005	0062	
Singer	0001	0150	0005	0062
	0023	0045	0028	0013
Sinotec	0095			
Sinudyne	0013	0033	0058	0149
	0005	0062	0161	
Sky	0005	0025	0112	0015
	0062	0148		
Skymaster	0010			
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Sliding	0110	0112		
SLX	0080			
Smaragd	0052			
Soemtron	0110	0136		
Solavox	0033	0013	0061	0005
	0062			
Sonawa	0020			
Sonko	0005	0062		
Sonig	0146			
Sonitron	0018	0037	0029	
Sonneclair	0005	0062		
Sonoko	0005	0062	0001	0024
	0025			
Sonolor	0018	0013	0149	0061
	0033	0025		
Sontec	0005	0062	0037	0001
Sony	0149	0002	0156	0031
	0004	0005	0062	
Sony	0009	0014		
Sound&Vision	0020	0039	0005	0062
Soundesign	0015			
Sound Wave	0005	0062	0043	0086
Soyea	0095			
Spectra	0001			
Ssangyong	0001			
Staksonic	0001			
Standard	0005	0062	0115	0020
	0001	0039		
Starlite	0001	0013	0005	0062
	0024	0042		
Stenway	0025	0020		
Stern	0013	0035	0024	0041
	0045			
Stevison	0164	0151		
Strato	0005	0062	0024	0001
Strong	0118	0117	0115	0005
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Sunkai	0032	0047	0020	0069
	0005	0062	0052	0110
Sunstar	0038	0005	0062	0001
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Sunwatt	0047			
Sunwood	0005	0062	0001	
Superla	0058	0019		
Supersonic	0018	0062	0081	0024
	0100	0047		
SuperTech	0001	0005	0062	0019
	0020			
Supra	0015	0039	0001	
Susumu	0028	0020	0026	
Sutron	0001			
Svasa	0100			
Swissline	0023			
Swisstec	0148	0112		
Sydney	0019			
Sysline	0005	0062		
Sytong	0019			
T+A	0176			
Tandberg	0036	0041	0012	0034
	0033	0013		
Tandy	0020	0023	0009	0013
Tashiko	0004	0014	0019	0013
	0035			
Tatung	0151	0005	0062	0058
	0002	0161	0158	0129
	0168			
TCM	0085	0135	0101	
Teac	0081	0057	0005	0145
	0115	0062	0084	0080
	0047	0083	0024	0162
	0015	0001	0042	0025
	0043	0014	0085	0117
	0157			
TEC	0001	0023	0028	0005
	0062	0033	0013	
TechLine	0005	0062	0080	0145
	0118			
TechLux	0121			
Technica	0020			
Technica	0164			
Technics	0077			
TechniSat	0005	0062	0013	0132
Technisson	0085	0135		
Technosonic	0005	0062		
Techwood	0118			
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Tedelex	0043	0067	0150	0001
	0083	0018	0081	0065
	0113	0005	0062	

Teiron	0001			
Teleavia	0012	0026	0030	
Telecor	0005	0062	0013	0020
	0174			
Telefunken	0071	0063	0165	0065
	0012	0081	0030	0084
	0054	0103	0114	0093
	0148	0026	0104	0028
	0007	0005	0062	0051
	0085	0151		
Telefusion	0005	0062		
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Telemeister	0005	0062		
Telesonic	0005	0062		
Telestar	0001	0005	0062	0042
Teletech	0005	0062	0080	0001
	0023	0115		
Teleton	0013	0004	0035	
Televideon	0013	0019		
Teleview	0005	0062		
Tempest	0001	0005	0062	0024
Tennessee	0005	0062		
Tensai	0020	0005	0062	0001
	0010	0039	0038	0040
	0023	0086	0013	0115
Tenson	0001			
Tesla	0005			
Tevion	0059	0166	0129	0136
	0005	0151	0062	0101
	0076	0080	0116	0085
	0115	0127	0135	
Texet	0039	0001	0019	0020
Thomson	0071	0063	0030	0026
	0012	0028	0005	0062
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Thorn	0011	0175	0012	0007
	0021	0030	0033	0149
	0006	0003	0055	0060
	0005	0062	0002	0028
	0057	0004	0039	
Thorn-Ferguson	0011	0012	0175	0033
	0028	0055	0007	0003
Tiny	0122	0133		
TMK	0015			
Tobishi	0020			
Tokai	0005	0062	0080	0013
	0039	0001	0115	
Tokaido	0115			
Tokyo	0019	0003		
Tomashi	0025	0020		
Tongtel	0097	0065		
Topline	0115	0080		

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	0006	0085	0012	0087
	0017	0016	0070	0161
	0001	0081	0005	0119
	0118	0163	0151	0131
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Toyoda	0001	0038	0024	
Trakton	0001	0024		
TransContinens	0080	0115	0005	0062
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Transonic	0005	0062	0047	0065
	0057	0024	0081	0084
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Transtec	0019			
Triad	0005	0062	0020	
Trident	0058			
Tristar	0024	0020	0175	
Triumph	0058	0165	0062	0005
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Uher	0005	0062	0039	0043
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Ultravox	0039	0023	0019	0013
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Unic Line	0005	0062	0048	0047
United	0085	0005	0086	0062
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	0002	0005	0057	0004
	0006	0013	0024	0062
	0041	0145	0014	0118
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Vestel	0005	0013	0062	0080
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Vexa	0001	0005	0062	
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Videologic	0020	0019		
Videologique	0019	0020		
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VideoSystem	0005	0062		
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Videoton	0013			
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Vision	0005	0024	0062	
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Vortec	0005	0062		
Voxson	0005	0062	0035	0043
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Waltham	0043	0026	0005	0062
	0080	0012	0115	0013
	0046			
Watson	0115	0127	0005	0062
	0013	0001	0080	0020
	0059	0174	0161	0145
	0142			
Watt Radio	0013	0019		
Wega	0005	0062	0004	
Wegavox	0001	0005	0062	
Welltech	0085			
Weltblick	0005	0062		
Weston	0005	0062		
Wharfedale	0005	0109	0059	0114
	0062	0151		
White Westinghouse	0019	0005	0062	0162
Windsor	0080	0115		
Windstar	0025			
WindySam	0062			
Wintel	0085			
World-of-Vision	0112	0167	0110	0135
	0136	0111	0125	
Worldview	0047			
X-View	0168			
Xenius	0074			
XLogic	0081	0108		
Xoro	0122	0125		
Xrypton	0005	0062		
Yamaha	0077	0152		
Yamishi	0025	0047	0020	0005
	0062			
Yokan	0005	0062		
Yoko	0005	0062	0020	0024
	0001	0037	0029	0019
	0023			
Yorx	0020			
Zanussi	0035			
Zenith	0162			
Zenor	0029			
ZX	0161			

Cover will be inserted